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The Effects of Cognitive and Meta-Cognitive Strategy Instruction in Decreasing Inappropriate Behavior in Elementary Aged Students With Behavior Disorders

by

Judy Norine Moench

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements of the degree of Doctor of Philosophy

in

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled The Effects of Cognitive and Meta-Cognitive Strategy Instruction in Decreasing Inappropriate Behavior in Elementary Aged Students With Behavior Disorders submitted by Judy Moench in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Educational Psychology in Special Education.

Dr. R. F. Mulcahy (Supervisor)

Dr. J. Cameron

Dr. C. Montgomerie

Dr. L. Wilgosh

Dr. K. Ward

Dr. R. Thygesen

Dated: april 8/98

Dedicated To

My parents for encouraging and guiding me.

Abstract

Research suggests the most common problem among children diagnosed as behaviorally disordered is aggressive behavior, and this behavior is on the rise. Teachers and administrators must ensure effective behavior programming for students. In order to achieve this goal, it becomes important to assess traditional programs. The purpose of this study was to determine whether meta-cognitive strategy instruction was more effective than traditional programs in relation to decreasing inappropriate behavior in elementary students who met the criteria for behavior disorders.

The sample was 26 students labeled as behavior disordered who were attending four elementary district sites for behaviorally disordered students within a large urban school system. Data were collected by teachers and parents using rating scales and frequency of inappropriate behaviors.

The six-month study utilized a Pre-test / Post-test Control Group Design. The Pre-test and Post-test data were obtained from The Conners' Teacher Rating Scale, The Barkley's Home and School Situations Questionnaire, a Structured Interview, and charting of inappropriate behavior recorded by the teachers. The experimental intervention included meta-cognitive strategy instruction and the control group received traditional interventions.

Results of the data analyses suggest that there is a greater decrease in the number of inappropriate behaviors (pre- to post-) in the meta-cognitive strategies instruction group when compared to the traditional group. Furthermore, results of the Barkley's Home and School Questionnaire suggest that students in the cognitive group show a greater decrease in the number of problem settings when compared to the traditional group; thus, these students appear to generalize their appropriate behavior into other settings. The Conners' Teacher Rating Scale indicates students receiving meta-cognitive strategy instruction show

a greater decrease in anxious-passive, emotional indulgence, and hyperactivity scales, as well as the hyperactivity index. Structured interviews suggest students receiving meta-cognitive strategy instruction were able, in more descriptive terms, to specify the feelings in their body as they became angry. Also, they gave more pro-active suggestions on how to deal with those feelings than students in traditional groups. Limitations of the study as well as educational and research implications are suggested.

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CHAPTER I

INTRODUCTION

The purpose of this study was to examine whether meta-cognitive strategy instruction was more effective than traditional programming in decreasing inappropriate behavior in elementary children who met the criteria for behavior disordered within a large urban school system; furthermore, the study explored whether treatment effects generalized across different times and settings.

Aggressive behavior is the most common problem in behavior disordered students, and this behavior is continually increasing (Epanchin & Paul, 1987; Kennedy, 1982). Teachers working with students with behavior disorders suggest aggressive and disruptive behaviors cause the most difficulty in the classroom (Wehby, Symons, & Shores, 1995). At times, students and teachers are faced with potentially threatening situations. Aggressive students must learn effective anger control strategies in order to ensure safety. Although some researchers may suggest that students in the concrete operational stage of development are unable to develop an internal locus of control, others have found success using cognitive interventions with elementary aged children (Nelson, Smith, Young, & Dodd, 1991). The intent of this study was to explore two types of programming for behavior in order to determine which of these types of intervention may be the most effective and which of the two interventions displays the greatest amount of generalization across different times and settings. This comparison may allow teachers and administrators to begin making educated decisions on what types of programs to employ.

This six month research study examines meta-cognitive strategy instruction and traditional programming. The goal of the study was to determine which type of programming, with respect to meta-cognitive strategies and traditional, was the most

effective in decreasing inappropriate student behavior in the classroom and in other settings such as home. Furthermore, student perceptions were addressed informally through structured interviews.

Twenty six students were involved in the research study. Thirteen students were in each of the groups. Students received pre- and post-testing which were compared statistically. As well, common themes were analyzed on an informal qualitative basis from interview results.

This study provides programming information for behavior with students presenting behavior disordered. If students are not empowered with the ability to monitor their own behavior, physiological and psychological out-bursts will continue to prevail. Research suggests it is possible to learn how to become internally rather than externally guided (Mulcahy, 1987).

The review of the literature (Chapter 2) encapsulates the pertinent issues surrounding intervention with students presenting behavior disorders. The following areas will be addressed: behavior disorders, inclusive education, children's anger, as well as intervention techniques. The rationale, methods, results, and discussion sections were assembled from the integral components of the review, and follow in subsequent chapters.

CHAPTER II

REVIEW OF THE LITERATURE

Administrators and educators share a common goal which emphasizes the effective and appropriate education for all students. Behavior disordered students demand effective behavior programming. This study explored two types of programming for behavior in an attempt to discover the most beneficial intervention for elementary behavior-disordered students in district sites* within a large urban school system. The study also attempted to determine which of the two types of behavior programming produced the most generalization with regard to different times and settings.

Behavior Disorders

A lack of consensus regarding the definition of behavior disorder prevails amongst psychiatrists, psychologists, and educational professionals. One of the definitions is that of Kaufmann (1977), who defines behavior disordered children as

> those children who chronically and markedly respond to their environment in socially unacceptable and/or personally unsatisfying ways but who can be taught more socially gratifying behavior. (p. 23)

These students have been labeled Attention Deficit Hyperactivity Disordered, Conduct Disordered, Oppositional Defiant, and Severely Emotionally Disturbed by the psychiatric and psychological profession. This terminology, which is encountered in the school system, has been developed by the American Psychiatric Association and permits these students to be assigned a diagnostic label, thereby allowing appropriate services to be

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* District sites are classrooms for students with special needs within a large urban school system. Students in district sites are bused to school from their homes.

delivered (Coleman, 1992). "Approximately 10% of children in school have moderate to severe emotional problems" (Bower, 1982, p. 60).

As previously discussed, research suggests that the most common problem among children diagnosed as behaviorally disordered is aggressive behavior, and that this behavior is on the rise (Epanchin & Paul, 1987; Kennedy, 1982). Aggressive behavior is usually viewed as external behavior (Wehby et al. 1995), which includes verbal or physical attacks to a person or property (Loeber as cited in Wehby et al.). Students exhibiting behavior disorders typically display aggressive behavior and other inappropriate behaviors in the classroom setting. The profession must encourage students to manage their behavior effectively. The following sections provide a selective review of literature with a focus on inclusive education, children's anger, aggression, and intervention techniques.

Inclusive Education and Behavior Disorders

If inclusion in the mainstream is the education system's goal for these students, it is crucial that this type of research be conducted to educate teachers and administrators to best meet the needs of students. Research on including students presenting severe behavior disorders in the regular classroom appears to have controversial results. Flicek, Olsen, Chivers, Kaufman, and Anderson (1996) report positive parent, student, and teacher ratings in support of an integrated setting. Harvey (1996) suggests "little empirical data on the effects of inclusion on systems, educators, and students exists" (p. 205). She came to the conclusion that students were perceived to make moderate progress and present moderate levels of aggression regardless of placement (inclusive vs. self-contained). Self-contained programs "were perceived by staff to be superior to mainstream programs in resources and teaching strategies" (p. 205); even though, relatively new programs were compared. MacMillan, Gresham, and Forness (1996) reported that students presenting

behavioral disorders are difficult to include in the regular classrooms. These researchers suggest that the problems that arise due to the students' behaviors are often "ignored by advocates of full inclusion" (p. 145). Perhaps teaching students with behavioral difficulties self-control strategies may enable them to become included in the regular classroom at some point in their school career, provided appropriate support and instruction. Despite the type of classroom setting, students exhibiting behavior disorders often display aggressive behaviors. Staff members may interpret these acts of aggression as arising from an inability to deal with anger and/or frustration. Students with behavior disorders often exhibit aggressive behavior when they appear to be acting out of anger. For example, a teacher may ask a student to complete an assignment. The teacher may state the request to the student which angers the student. More specifically, if the student does not want to complete the assignment a confrontational situation may arise. This may lead to the student becoming angry, which may result in student aggression towards the teacher. Anger and frustration, along with other emotions, may lead to aggressive acts in the classroom.

Children's Anger

Anger is an emotion which has a wide range of definitions. The Dictionary of Concepts in General Psychology defines anger as "a transitory emotional reaction that is subjectively compelling, often unpleasant, and varying in intensity from mild to distressingly strong. Anger consists of two components: disquieting subjective feelings and an awareness of physiological reactions that is characteristic of all emotion" (p.17).

Often anger is identified through an assortment of physical reactions. These reactions may include "particular facial grimaces and body positions characteristic of action in the autonomic nervous system" (Reber, 1987, p. 234). At times, anger produces an overt attack toward people or objects. Anger is usually short in duration and often

supersedes a multitude of similar responses; therefore, confusion of terminology often arises. Hostility, frustration, aggression, rage, and hatred are often used synonymously with the term anger.

A typical dictionary definition of frustration includes feelings of disappointment, the result of preventing someone from achieving an object, and feelings in someone of being thwarted or baffled, deprived of what was due, or having some fundamental need satisfied. Frustration is usually a feeling directed toward oneself; however, anger is usually a feeling directed toward someone else or something else. The duration of the anger response is short-lived. However, aggression, hostility, and frustration are often longer lasting (Popplestone & White McPherson, 1988).

Anger has been studied by researchers for many years. Hall conducted one of the early studies of anger in children and adults in 1899. "Hall's recommendations for the control of anger included the simultaneous application of various strategies, emphasizing particularly the fending off of the reaction by diverting attention to other topics, reflecting on moral and ethical matters, or even reciting some biblical text" (Popplestone & White McPherson, 1988, p. 323). Relaxation was also a recommendation for anger control considered by Hall. Studies in the area of relaxation continue to show positive results in the area of anger control and will be discussed later in this review.

The study conducted by Richardson, in 1918, indicated that anger is more often provoked by people than objects (cited in Popplestone & White McPerson, 1988). Furthermore, findings suggest that anger is a brief response. Gates (1926) concurs with Richardson's study, suggesting "that an important provocation of anger, particularly when the feeling is intense, is a sense of being imposed upon, especially when there is a blocking of self-assertiveness" (p. 267). Goodenough explored the anger responses of children, as

described by their mothers, beginning in 1931, and detected that mothers who responded to their children's temper tantrums by giving in to what the child wanted were more prone to have children with a higher number of temper tantrums (Goodenough as cited in Popplestone & McPherson, 1988). Later studies have shown that anger can lead to other actions such as acts of aggression and violence (Wehby, et al., 1995). Furthermore, other studies cite the medical effects of anger (Williams & Williams, 1993).

Physiological body changes occur as a result of stress and anger. Galvanic skin response, heart rate and blood pressure are a few of those body responses. Individuals with a high level of hostility are more prone to medical complications. Excessive stress is often highly correlated with a vast number of illnesses, including coronary disease, high blood pressure, hypertension, chronic pain, headache, insomnia, asthma, eating disorders, depression, and skin disorders. Williams and Williams (1993) have been trying to determine how one's mind and emotions can lead to medical illness and, perhaps, even death. Findings suggest, anger can lead to numerous medical complications. Researchers at Duke University are studying the relationship between hostile people and the likelihood of becoming smokers, alcoholics, and high calorie eaters; and they and have found a positive correlation between the variables. These habits can lead to serious medical complications. Anderson (1985) believes that "many psychological and physiological disorders may have some etiology in an unconstructive response to anger. Still others may be exacerbated by repressed or suppressed anger" (p. 2). Evidence would then demonstrate that serious harm can be a result of insufficient anger control. Children can be affected in many different ways. Tension, stress, and anxiety deprive the body both, mentally and physically, through the reduction of the ability to enjoy life; and these emotions hinder adaptation to challenges (Cautela & Groden, 1978). Furthermore, these

complications may have devastating effects on learning. Anger causes stress which may lead to decreases in learning.

The use of self-control provides a psychological method of dealing with anger in an appropriate manner. Anger leads to stress. Continued and consistent stress can lead to elevations in blood pressure (Harlan, 1984). Elevated blood pressure is a common cause of coronary heart disease. Thus, facilitating self-control in children may reduce anger outbursts resulting in healthier students who are better able to learn. There are a number of intervention techniques available in the literature which have been utilized with students presenting behavior disorders.

Intervention Techniques

Two theoretical frameworks are explored in this selective review of the literature in relation to decreasing inappropriate behaviors in the classroom: behavior modification and cognitive intervention.

Behavior Modification

Past research has referred to externally managed programs designed to promote academic and social behavior in students presented with behavioral challenges (Blackham & Silberman, 1980; Jensen, Sloane, & Young, 1988; Sulzer-Azaroff & Mayer, 1986). This approach focuses on the effect of the environment on behavior and maintains that people respond to an external locus of control according to the principles of reinforcement; therefore, a behavior that has been reinforced will occur again. A behavior modification program incorporates the use of positive and negative reinforcement. Positive reinforcement is defined as any stimulus which will increase the likelihood of the desired response that it follows. Negative reinforcement is the increased probability of a response that occurs by the removal of a stimulus. Behavior modification programs incorporate the

use of reinforcement schedules which are intended to increase the frequency of the desired behavior. This is often achieved through token systems.

Token economy systems, where a student is able to earn a token for appropriate behavior, are based on the principles of reinforcement. The students receives a token when they perform the desired behavior. These tokens are tangible items such as stars, stamps, check marks, points, etc. Some token economy systems allow students to earn back lost tokens where other systems, commonly referred to as response cost systems, do not allow students to buy back lost tokens. Response cost systems use the removal or withdraw of a reinforcing stimulus or event, due to a lack of appropriate performance by a student. Thus, the inappropriate behavior has a cost where a token is taken from the student. The use of token economy systems and response cost systems have been widely used with students with behavioral difficulties, in school, community, and rehabilitation settings (Kazdin, 1982). Salend and Henry (1981) propose, "response cost has been shown to be an effective method of suppressing a wide range of inappropriate behaviors in a variety of settings (Axelrod, 1973; Humphrey, Karoly & Kirschenbaum, 1978; Hundert, 1976; Kazdin, 1972; McSweeney, 1978)" (p. 245). Response cost and token economy systems have both been found to decrease levels of aggression, inattention, and time off task while increasing levels of achievement (Kaufman & O'Leary, 1972). Tokens utilized in these systems may include toys, candy, listening to tapes, going on an outing, or participating in a special classroom event.

Level systems incorporate the use of token economy systems and/or response cost systems whereby students ascend through an ordered sequence of privileges. The privileges become more attractive as the student progresses higher in the level system. Students progress through the levels at different rates depending on when appropriate target

behaviors are mastered. The goal of a level system is to increase the responsibility of a student, utilizing the principles of behavior modification (George et al., 1990).

Researchers suggest that behavior modification programs present several potential problems (Kazdin, 1975; Mulcahy, 1987). First, much student behavior may go unnoticed by external agents. Second, discriminative attributes may be acquired due to the dependency of the authorized administrator. For example, several different individuals such as teachers and assistants may be working closely with the same student. As a result, each person may have different expectations regarding a child's behavior. Therefore, discrimination may unwittingly be prevalent in decision making. Third, there has been a great deal of difficulty facilitating the generalization of externally managed programs. While the behavior of students does improve using a more traditional behavior modification approach, there is often no transfer to other situations (Kazdin, 1975).

In a pilot study, conducted by the researcher, teachers and assistants reported that behavior modification techniques can prove to be beneficial in changing student behavior in the classroom; however, when contingencies are removed or control of the external structures changes, inappropriate behaviors often reappear. Due to the potential disadvantages associated with externally based programs, research has also focused on internally managed programs. The results of these programs show that students who receive self-control training have fewer aggressive behaviors after training and exhibit more self-control (Etscheidt, 1991; Nelson, et al., 1991). In addition, externally managed incentive systems do not appear to increase the effectiveness of self-control training programs (Etscheidt, 1991). The study involved 30 students exhibiting behavior disorders and investigated the efficacy of self-control training programs in decreasing aggressive behavior. Researchers found that including a positive consequence for exhibiting the

strategies presented during the training program did not increase the effectiveness of the program. Thus, results of the study suggest that students who received the training program displayed "significantly more self-control than students in the control group" (Etscheidt, 1991, p. 108); however, there were no significant differences noted between the groups receiving only the training program and those receiving the training program as well as a positive incentive. Falk, Dunlap, and Kern (1996) demonstrated positive results of video taping student interactions. They found increased appropriate peer interactions after students watched video tapes of their own interactions with peers. It appeared from the displayed graphs that slight increases were noted when tangible rewards were added to the program; however, it appeared that increases in the number of positive peer interactions tend to level off to the pre-incentive level.

Cognitive Strategies/Self-Regulation

Self-regulated learners take ownership and responsibility for their own learning and behavior. Zimmerman (1989) proposes "students can be described as self-regulated to the degree that they are meta-cognitively, motivationally and behaviorally active participants in their own learning processes" (p. 3). Self-regulated learning is the procedure by which students have control over their own thinking, their own affect, and their own behavior as they attain knowledge and skills (Zimmerman, 1989). Students who display deficits in self-regulatory behavior tend to have lower self-esteem, be more anxious, need more approval, and are more inspired by extrinsic factors than students who appear to display self-regulatory behavior (Schunk & Zimmerman, 1994). Students, who display lower perceived ability and show negative affect toward their own learning and behavior, tend to show regression in their problem-solving abilities when they begin to experience failure in situations where performance is required.

Students can be taught self-regulation through cognitive strategies instruction. Cognitive theory teaches the use of strategies to individuals in order to facilitate learning. A review of recent research in the field of cognitive-based programs indicates a high level of success with behavior-disordered students (Nelson et al. 1991). Cognitive theory focuses on an internal locus of control and suggests:

> it is important to consider what happens internally to the person who is learning and to view learning as construction. It is the learner who is the most important element in the teaching-learning situation; not materials, lessons, teachers, or other factors external to the learner (Reid & Hresko, 1981, p. 49).

A well planned, cognitive based program will provide the students with a range of activities that will allow them to expand their prior knowledge base. In such an approach, the teacher is viewed as a facilitator who allows and encourages students to take an active role in the learning process, resulting in higher levels of performance. It is important to note that the teacher, acting as facilitator, can arrange external conditions providing numerous possibilities for student growth in strategies. Teachers may use Socratic dialog, prompting, cueing, and other techniques to increase student growth.

Researchers have demonstrated that numerous academic and social behaviors are promoted through the use of self-control strategies. Facilitation of these strategies results in higher levels of performance, more specifically: increased on-task behavior, increased attention span, increased responsiveness to questions, increased self-esteem, increased academic success, increased task accuracy, increased self-control, increased completion of homework, decreased impulsivity, decreased non-work oriented behavior, decreased anxiety, decreased aggression, and decreased class absenteeism (Dunlap, Dunlap, Koegel,

& Koegel, 1991; Etscheidt, 1991; Mahoney & Arnkoff, 1979; McConnel, 1987; Michenbaum, 1971; Nelson et al. 1991; Workman, 1982).

In the above studies, the researchers did not include a goal setting component in their intervention technique. Research also shows that setting specific goals is highly related to task performance (Mento, Steel, & Karren, 1987). Further, past studies have not included a multi-intervention technique which includes social skills, goal setting, self-talk, problem solving, relaxation, visualization and self-monitoring physiological body changes. A program which utilizes multi-techniques may prove to be more effective as students would begin to monitor their own behavior and utilize a strategy for self-control before an aggressive outburst occurred. In addition, a multi-intervention program may meet the individualized needs of specific students allowing students to choose which strategies work for them.

The recognition of one's physiological body changes is a process which involves self-monitoring. Affective impulse regulation through the use of self-monitoring strategies promotes pro-social behavior and discourages anti-social behavior (Dunlap et al., 1991). Researchers (Dunlap et al., 1991; Etscheidt, 1991; Mahoney & Arnkoff, 1979; McConnel, 1987; Michenbaum, 1971; Nelson et al., 1991; Workman, 1982) have demonstrated that numerous academic and social behaviors are promoted through the use of self-control strategies. Facilitation of these strategies results in higher levels of performance. Etscheidt suggests students who receive self-control training display significantly more self-control than students who do not receive training. In addition, students obtaining self-control training present significantly fewer aggressive behaviors after training. Furthermore, an externally controlled incentive program does not appear to increase the effectiveness of a self-control training program (Etscheidt, 1991).

Students can increase their on-task behavior through the use of self-monitoring strategies (Dunlap et al., 1991; Nelson et al., 1991; Rubin, 1980; Workman, 1982). Students who are able to remain on-task may not have as many confrontations with teachers, which may lead to decreases in outbursts of anger. Meichenbaum (1971) suggests students can increase their attention span and decrease impulsivity through the use of self-talk. Positive self-talk is used to encourage students to make a shift from an external locus of control to an internal locus of control. "Early in development, the speech of others, usually adults, mainly controls and directs a child's behavior; somewhat later, the child's covert or inner speech can assume a regulatory role" (Meichenbaum et al., 1971, p. 116). Students are encouraged to develop positive inner speech. Research suggests a correlation between negative self-talk and poor classroom behavior (Bivens & Berk, 1990; Manning, 1990). Manning suggests, "effective intervention techniques would include training in the use of positive, reassuring self-talk statements, since statements of this sort were correlated with excellent behavior" (p. 216). Snider (1987) believes professionals should question the validity of this approach. She discusses the impracticality of asking students who are unable to recall important information, to ask themselves questions such as "Am I working?" Snider suggests that this type of self-talk will not be useful if the student is unable to use verbal rehearsal strategies in order to perform the task. The same type of argument can be put forward when looking at student attention. If children do not know what information is relevant or irrelevant, asking the question, "Am I paying attention?" will not help them. Hallahan, Willis, and Lloyd (1987) concur with Snider and suggest that the child must recognize what s/he should be attending to. It becomes vital that the teacher work with students in order to help them recognize relevant versus irrelevant information. Snider also suggests, "if students demonstrate attentive behaviors as a result

of self-monitoring training, but without academic gains, the value of the procedure must be questioned" (p. 153). This shows the importance of evaluating academic instruction prior to the introduction of self-monitoring procedures. Student work must be individually assigned at a level which is appropriate. If assignments are too easy or too hard for students, they may display inattentive behaviors resulting in frustration and anger.

When self-monitoring is employed, students improve in a number of areas. Studies carried out by Workman (1982) and Dunlap et. al. (1991) have reported an increase in academic performance through the use of self-monitoring. Dunlap et. al. (1991) has also reported increased responsiveness to questions and increased completion of homework. Further studies report increased task accuracy (Nelson et al., 1991), increased self-control (Etscheidt, 1991), decreased aggression (Etscheidt, 1991), and decreased class absences (Nelson et al., 1991). Researchers suggest different methods of teaching students to monitor their behavior (Dunlap, 1991; Etscheidt, 1991; Meichenbaum, 1971; Nelson et. al., 1991; Rhode, Morgan, & Young, 1983; Rubin 1980; Workman, 1982). Some methods include a contingency reinforcement system, and others are cognitive in nature. Researchers suggest that developing an external reward system as an incentive for implementing self-control techniques does not appear to increase the effectiveness of self-control training programs (Etscheidt, 1991). Kamps and Tankersley (1996) suggest self-management systems "have strong implications for early intervention for behavioral disorders. Children with behavioral disorders often lack the ability to regulate their behavior" (p. 45).

Students with behavioral difficulties often display difficulties meeting societal standards in terms of socially acceptable behavior. Research suggests that a relationship exists "between social goal pursuit and displays of social behavior" (Wentzel, 1994, p.

176). Goal setting procedures were found to enhance anger-coping interventions in reducing aggressive off-task behaviors (Lochman, Curry, Burch, & Lampron, 1984). Further studies (Renshaw & Asher, 1983) have shown that focusing on goals may be productive for promoting friendships. Also, students receiving training in goal setting and problem solving display the "greatest change on measures of beliefs about friendships and friendship behaviors" (p. 355) when compared to students receiving training in either goal setting or problem solving separately. Likewise, social skills training has been effective in promoting pro-social behavior in students presenting behavioral difficulties, according to perceptions of students, teachers, and parents (Zaragoze, Vaughn, & McIntosh, 1991). The selective review of the literature above suggests studies present the most significant results when strategies are taught in combination.

Relaxation programs range from multi-intervention techniques where students are involved in a range of activities such as anger control, communication skills, problem solving, self-talk, and role-play; to single-intervention programs whereby students are trained specifically in relaxation techniques. Furthermore, relaxation training has been used to improve acting out (Corder, Whiteside, & Hailip, 1986; Oldfield, 1986; Omizo, Omizo, & Suzuko, 1987), memory and attention span (Braud, Lupin, & Braud, 1975; Hughes, & Henry, 1977), distractibility or impulse control (Corder, Whiteside, & Hailip, 1986; Omizo, Omizo, & Suzuko, 1987), self-concept (Oldfield, 1986), and improving fine motor coordination (Braud, 1975; Carter, & Synolds, 1974). Stress can be reduced through the use of relaxation activities (Selye, 1974).

Oldfield concurs with the preceding findings proposing an association between self-concept and acting-out behavior. Moreover, his findings suggest that students who were involved in relaxation programs were able to better control their acting-out behavior when

compared to students involved in behavioral charting, where students chose a behavior to chart throughout the 80 school-day study. Individual instruction was given to both groups on their intervention technique. In addition, Omizo, et al. (1987) found similar results with students who were emotionally handicapped learning disabled. Conclusions suggest that students who were emotionally handicapped learning disabled had fewer acting-out behaviors and were less distractible after a multi-intervention program which included role-playing; self-disclosure; giving and receiving feedback; nonverbal, listening, and paraphrasing exercises; as well as relaxation training.

Students with behavior disorders often have difficulty controlling their anger. A study conducted by Dangel, Deschner, and Rasp (1989) suggests that self-control training can reduce the rate of aggression in adolescents within a residential treatment facility. Students were taught thought-stopping, problem solving, self-talk, and relaxation training. This multi-intervention program noted a "slow erratic decrease" (Dangel, et al., 1989) in aggressive behavior which was followed by a new stabilized lower rate of aggressive incidences during the follow-up study.

In addition, Oldfield and Petosa (1986) conducted a study with elementary aged students in kindergarten through sixth grade. The teachers were trained in relaxation training for children. Next, teachers were given audio tapes, teacher's manuals, finger thermometers, and student workbooks. The treatment program was three months in length. Upon completion of the program, "the acquisition of relaxation skills positively influenced the ability of children to be attentive to instructional events in a school setting" (Oldfield & Petosa, 1986, p. 184). Additionally, teachers reported that students demonstrated greater empathy; asthmatic attacks were more easily handled by having

students focus on their breathing, and students were calmer and easier to manage during unstructured events such as recess.

Zaichkowsky, Zaichkowsky, and Yeager, (1986) included biofeedback machines to assist students in relaxation activities. Students learned to control their heart rates, respiration rates, and skin temperatures through the use of temperature biofeedback in combination with relaxation techniques such as breathing, visual images, and progressive muscle relaxation. The authors reported that students were motivated to utilize the biofeedback machines. Bender and Evans (1989) concur with the results of the study conducted by Zaichkowsky, et al.. "Biofeedback-induced relaxation training is a technique used to remediate behavioral problems of students through an increased awareness of physiological changes in the body (Cobb & Evans, 1981; Matthews, 1981; Strider & Strider, 1979; Walton, 1979). This procedure can be very helpful for the typical BD (Behavior Disordered) student who demonstrates hyperactivity, impulsivity, and frequent out-of-seat behaviors" (Bender, & Evans, 1989, p. 91). Bender and Evans point out that biofeedback machines may not be accessible to teachers of mainstreamed students; however, they suggest that the special education resource teacher could be responsible for transporting the student with behavior difficulties to a local biofeedback centre in order to learn the technique. Perhaps this would be a viable solution for some schools; nonetheless, it would be very difficult to do where extra support services are depleted due to budget cuts.

Even more importantly, Hiebert, Dumka, and Cardinal (1983) found a high degree of correlation between self-monitored heart rate, respiration rate, and finger temperature to externally monitored measures such as biofeedback. Their study demonstrates that self-monitored responses and biofeedback are equitable reflections of physiological

performance. Thus, individuals can use self-monitoring to regulate their physiological body changes. Furthermore, this process is internally guided and does not encompass the use of external forces such as biofeedback machines. This type of monitoring allows an individual to effectively utilize numerous coping strategies in all settings, rather than merely in the comfort of the therapist's office, where external forces prevail. Biofeedback training may be effective in the therapeutic setting; nonetheless, students do not have access to biofeedback machines at all times and need to learn to monitor their physiological responses internally.

Carey (1986) developed a case study to teach a 12-year-old boy to relax and visualize ideal performance as if he was engaged in the activity at that precise moment. Carey cites numerous articles and books which utilize this type of relaxation and imagery training (Anderson, 1980; Brockett, 1979; Gerler, 1985; McWhirter & McWhirter, 1983; Kochendorfer & Culp, 1979; Owen & Wilson, 1980; Sheikh, 1983). The students are taught how to relax and then asked to paint pictures in their minds. These pictures depict the desired performance. Carey suggests several items to consider when using productive imagery. First, the suggestions and definitions of images should be positive. Second, repeat and improve the needed image. Third, monitor the level of relaxation, continually. Fourth, include reinforcement into the scenes. Finally, have students practice on their own on a regular basis.

Strategies Program For Effective Learning and Thinking

Strategies Program For Effective Learning and Thinking (S.P.E.L.T.) was originally developed in 1984 as an instructional approach to teach meta-cognitive and cognitive strategies. Furthermore, the S.P.E.L.T. approach assists students in developing "control and regulation of affect and motivation" (p. 386). This approach assumes that

learning is an active process where students are involved in the utilization of their cognitive processes. The S.P.E.L.T. model encourages student to decide what type of strategy is needed for a certain situation. Also, students are encouraged to implement the strategy and also evaluate the strategy, themselves, and the task. "Cognitive and meta-cognitive strategies are viewed in our approach as internally organized skills or control process by which individuals regulate their behavior (both affective and cognitive)" (p. 387). This approach has been developed into a three phase methodology which is further described in the Methods section of this thesis. Furthermore, teachers are trained in the theoretical framework, the instructional model, and generalization techniques to use with their students. This in-service technique is elaborated in the Methods section.

The S.P.E.L.T. approach has been "extensively evaluated" in the research. A three year longitudinal study was conducted with "nine hundred students (learning difficulties, average, and gifted) initially in regular grade 4 and grade 7 experimental and control classrooms were followed over the course of three years" (p. 390). Students were followed for two years of strategy instruction and then in the third, maintenance year, all instruction was withdrawn. The "results for measures of reading comprehension and vocabulary, as well as meta-cognitive awareness in reading and comprehension monitoring, are encouraging" (p. 395). A replication study was conducted in Australia with grades 4, 5, and 6 (Patterson, 1996). Similar findings were obtained, specifically with respect to students presenting learning difficulties, reading comprehension, meta-cognitive reading awareness, and strategy utilization. Further studies are currently be conducted at the University of Calgary in the area of reading and meta-cognitive instruction. Preliminary results indicate encouraging results in the area of reading in comparison to control groups. Wiles (1997) conducted a study with adults presenting

learning difficulties. Results indicated that meta-cognitive strategy instruction increased student perception of control of their learning and their perception of success in learning. Furthermore, increases were obtained in reading comprehension as compared to control groups. Brenton-Haden (1997) conducted a study with teacher identified students exhibiting attention difficulties. Results indicated that meta-cognitive instruction advanced their control of their attention. More specifically, students were better able to focus after teaching positive self-talk and mapping strategies.

This type of instruction appears to be a necessary element for students with behavioral difficulties. The objective of the S.P.E.L.T. program is to have students in control of their own learning to control their affective states including anger and other emotions. This particular approach is the only approach that integrates the content area with the affective domain; therefore, students are not only in control of their own learning but they are also in control of motivation and affect. Lastly, the S.P.E.L.T. approach emphasizes the importance of teaching students how to generalize these acquired strategies.

Strategy Generalization

Literature suggests that up to this point in time generalization and maintenance of strategies has been difficult to achieve (Nelson et al., 1991). Results tend to demonstrate that programming must be initiated in order for behavioral improvements to be consistently maintained over longer periods of time and in different settings (Nelson et al., 1991).

Some studies have shown little or no generalization of self-monitoring behavior across settings and overtime. Specifically, previous researchers have failed to recognize the primacy of the learner's locus of control as the fundamental underpinning of strategic learning. "The key feature of what makes an autonomous learner appears to be the independent self-control of one's cognitive as well as affective resources and activities"

(Mulcahy, 1991, p. 385). Therefore, students' beliefs concerning their academic level, effort, and self-esteem, work together in order to promote or hinder self-regulated learning. In order to ensure generalization and maintenance, it is necessary to provide students with techniques which will facilitate this process. These techniques must be effectively programmed for students to initiate generalization of anger control strategies. The dissertation study has included a component for generalization.

In conclusion, in programming for students with behavior disorders, teachers must include a generalization component. As previously noted, token economy programs are designed to change behavior through an external locus of control. Strategic learning is designed to facilitate a shift from dependent external control, where students feel they do not have control of their outcomes, to independent internal control, giving students ownership and helping them become responsible for their own learning and behavior. This is commonly referred to as changing the student's locus of control.

Morrow and Morrow (1990) note that "one of the most compelling reasons to use self-management procedures is to avoid the criticism that has plagued the implementation of strictly behavioral approaches -- the necessity of an external agent" (p. 35). They conclude, if integration is the objective, pro-social behavior needs to be displayed by students with behavior disorders, without the use of external agents. O'Leary and Dubey (1979) discuss five important reasons for utilizing self-management programs, as opposed to strictly behavior modification programs. Firstly, our society and culture demand independence. Secondly, it is difficult if not impossible to utilize external controls on an ongoing basis. Thirdly, if students can control their own behavior, teachers can spend more time teaching academic curricular areas. Fourthly, self-management techniques can assist students with strategies which will allow them to behave in a socially appropriate

manner without the requirement of adult supervision. Lastly, more consistent changes in behavior may be noted when students learn to control their own behavior without relying on external agents.

The literature provides a clear picture that students presenting behavior disorders present challenges to educational professionals. At times, their behavior can be aggressive. This may be the result of an inability to deal with emotions such as anger and frustration. This type of behavior demands effective programming.

The next chapter, rationale, provides a synopsis of the reasoning and hypothesis of this research study. The rationale will be addressed in terms of the literature. Furthermore, specific research questions will be discussed.

CHAPTER III

RATIONALE

Researchers suggest that many psychological and physiological disorders are caused by inappropriate responses to anger (Williams & Williams, 1993). It would seem logical to focus treatment not only on physiological responses to anger but also on coping skills for self-control. Further research is needed in this area which will allow educators to best meet the needs of these students. Students with behavior disorders often display inappropriate behavior when they are angry and appear to lack self-control. This lack of self-control may be due to their inability to self-monitor their behavior.

If students are not empowered with the ability to monitor their own behavior, physiological and psychological out-bursts will continue to prevail. These methods of dealing with anger may have been learned; therefore, it may be possible to learn new and appropriate methods of dealing with anger. In the dissertation study, two types of behavior programming are compared to detect the most appropriate method to assist behavior disordered students in decreasing inappropriate behavior and generalizing appropriate behaviors across settings and time.

Elementary-aged behavior disordered students display inappropriate behavior which can be disruptive and aggressive. The safety of students and staff members is a priority of school boards, and violence is a major problem in classrooms that house behavior disordered students. There appears to be an increase in the number of students who are referred to pro-social skills classrooms. Many teachers feel as though they are not properly trained to deal with some of the extreme behaviors that these students present.

The author has noted and confirmed with consulting services that, presently, the majority of pro-social skills programs within a large urban school system are utilizing a

token economy system. According to current research (Nelson et al., 1991), these programs may not be as effective as cognitive intervention programs. Cognitive techniques may provide behavior disordered students with relevant strategies in order to cope with the challenges that the students present. If the techniques are clear, understandable, and presented in a positive manner, they encourage students to be responsible and accountable. These strategies may give students the ability to choose their behavior, assess their behavior, and reinforce themselves, accordingly, resulting in success and independence. Strategies may increase on-task behavior which will have a snowball effect, translating into increased on-task behavior, leading to increased work completed, followed by increased satisfaction of students which may improve their self-esteem, resulting in decreases in inappropriate behaviors.

Self-management techniques are practical in that they can be used with a variety of student levels, requiring little supervision; moreover, they are simple to implement. These techniques can be used simultaneously with all areas of the curriculum. Self-management techniques could be easily implemented in a segregated classroom for students presenting behavioral problems. These strategies may empower students with independence over their own behavioral and academic gains.

Both token economy systems and meta-cognitive intervention programs may show a decrease in the amount of aggressive behavior. It is necessary that students generalize this behavior across different times and settings. The purpose of this study is to provide teachers and administrators with preliminary data regarding the generalization of meta-cognitive and traditional programs.

During implementation of the study, the program included components of generalization strategies. Furthermore, strategic learning included components of social

skill development, positive self-talk, relaxation, visualization, goal setting, problem solving, and self-monitoring physiological body changes. These strategies have been chosen based on the selected review of the literature. Furthermore, research has not been found which has taken more than two strategies in combination; however, those studies citing the use of two strategies have shown greater effects than those utilizing one strategy. In addition, teaching a number of strategies to a group of students may assist in meeting the needs of more students. Furthermore, the study included a well-rounded program that attempts the support the maintenance and generalization of the meta-cognitive strategy intervention program.

Examination of the medical research suggests that people who are angry may not live as long as those who can control their anger. Children must learn to self-monitor their physical and mental well-being and adjust responses accordingly. Perhaps, children can be taught to effectively monitor their physiological body responses. What's more, efforts must be made to educate society on the effects of anger. There is a need to educate teachers and administrators on the effects of anger in behavior disordered children and discover the most suitable intervention techniques to assist their students.

Perhaps empowering students with self-monitoring strategies in order to recognize physiological body changes, which transpire before violent outbursts occur, would alleviate some of the presently sought after pharmacological therapies. "Hygienic approaches that rely on developing lifelong behaviors would be most effectively introduced early in life and would likely be more efficacious therapeutically" (Harlan, 1984, p. 809). Not only must preventative measures continue, whereby early detection of children prone to problematic anger control are identified, but also students need to learn self-monitoring procedures and coping skills.

Behavior disordered students demonstrate difficulty controlling their emotions, often resulting in aggression. Recognizing physiological body changes before the aggression occurs may empower students with a greater degree of independence and control over their own behavior. Children must recognize what they should be attending to in order for self-monitoring to be effective; therefore, it is vital to have students understand and recognize what physiological body changes are before beginning the self-monitoring process. If students are able to become aware of the physiological changes occurring as they get angry, they may begin to break the cycle before the aggression begins. Students might then begin to replace aggression with self-control.

Defining Key Terms

Behavior Disordered

In this study students with behavior disorders are defined as those elementary students who meet the criteria, according to the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders 1994 fourth edition (DSM IV), for disruptive behavior disorders within a large urban school system. The DSM IV includes classifications of Oppositional Defiant Disorder, Conduct Disorder, Attention Deficit/Hyperactivity Disorder (combined type), Attention Deficit/Hyperactivity Disorder (predominately inattentive type), and Attention Deficit Hyperactivity Disorder (predominantly hyperactive-impulsive type) under the classification of Attention-Deficit and Disruptive Behavior Disorder. For further clarification on criteria refer to the DSM IV (p. 78 - 94).

This study involved an attempt to observe aggressive behavior in the classroom. Nine behaviors were identified to be observed and are operationally defined in the instruments/measures section of chapter four.

Inappropriate Behavior

Inappropriate classroom behavior included behaviors that endanger the safety and welfare of the student and others within the school setting or those behaviors that disrupt the learning environment within the classroom. For the purpose of the present study these behaviors included physical aggression, verbal aggression, defiance, calling out, tattle-taling, whining, temper tantrums, running away and out-of-seat behaviors.

Meta-Cognitive Strategies

Meta-cognitive strategies not only emphasized reinforcement principles but also taught the use of strategies to individuals in order to facilitate learning and behavior. The three phase S.P.E.L.T. methodology was utilized. Phase one involved the actual teaching of the strategy and student practice. Phase two allowed students to develop their own strategies, utilizing reciprocal teaching and peer coaching. During phase three, students reformulated the strategy based on the information attained from phase two and took the strategy outside the classroom environment. Further explanation is provided in the intervention section of this dissertation study.

Traditional Programming

Traditional Programs included implementation of an external management program which utilized a reward system. These programs were token economy systems that had been developed by the teacher in collaboration with school board consultants.

Physiological Outbursts

Physiological outbursts were defined as incidents which caused any physiological responses to anger or frustration such as increased heart rate, increased/decreased body

temperature, shaking, increased blood pressure, as determined by the Structured Interview (see Appendix A).

Generalization

Generalization was the student's ability to maintain pro-social behavior in different settings and across time according to Russell A. Barkley's Home Situations Questionnaire, and Russell A. Barkley's School Situations Questionnaire (Guildford Press, 1981).

Specific Research Questions

Will meta-cognitive strategies instruction be more effective than traditional programs in decreasing inappropriate behavior in elementary children who meet the criteria for behavior disordered, as measured by observational recordings?

Will meta-cognitive strategies instruction show more generalization than traditional programs across time and settings, in decreasing inappropriate behavior in elementary children who meet the criteria for behavior disordered, as measured by the Russell A. Barkley Home Situations Questionnaire and the Russell A. Barkley School Situations Questionnaire?

Will the students' perception of physiological outbursts and their awareness of how to self-manage these outbursts increase as a function of meta-cognitive strategies instruction or traditional programming techniques as measured by the Structured Interview?

Major Hypotheses

Inappropriate behavior will decrease in the classroom utilizing either traditional programming or meta-cognitive intervention strategies as measured by observational recordings.

Meta-cognitive strategy instruction will be more effective in promoting generalization than traditional programming, as measured by the Russell A. Barkley Home and School Situations Questionnaires.

Student perception of physiological outbursts and their awareness of how to self-manage these outbursts will increase more as a function of meta-cognitive strategy instruction than traditional programming.

Summary

Students with behavior disorders demand appropriate programming. This study investigated programming at the elementary level. The next chapter addresses the methods used for the research project including details on the pilot research, sampling, instruments and procedure of data collection, as well as scoring, and the intervention procedures.

CHAPTER IV

METHODS

This chapter addresses the research design, followed by a description of pilot research, the subjects, procedures, as well as instruments utilized in the study. Finally, a section describes the program implementation of both the meta-cognitive strategies and traditional programs.

Overview

The research took place over a six month period in the 1996 school year, within a large urban school system. A quasi-experimental research method was utilized. A Pre-test/Post-test Control Group Design was selected for the research study. Results of an examination of experimental research conducted by Dunlap and Childs (1996) suggested that Pre- and Post-test comparisons were the most commonly used design when studying students presenting behavior disorders. The Pre-test refers to the baseline data obtained from The Conners' Teacher Rating Scale, The Russell A. Barkley Home Situations Questionnaire, The Russell A. Barkley School Situations Questionnaire, The Structured Interview, and the average of the first three days of charting inappropriate behavior recorded by the teachers at the onset of the study. The experimental intervention included Meta-Cognitive Strategy Instruction. The control group received traditional programming. The Post-test data included The Conners' Teacher Rating Scale, The Russell A. Barkley Home Situations Questionnaire, The Russell A. Barkley's School Situations Questionnaire, The Structured Interview, and the average of the last two weeks of behavioral charting recorded by the teachers. Results of the charting of inappropriate behavior were taken between pre- and post-intervention and were entered into SPSS for statistical analysis. As well, FileMaker Pro 3.0 was utilized for post-hoc questions that may arise.

Pilot Study

In order to further determine the efficacy of the dissertation study, a pilot study was conducted. Eight schools agreed to participate in the pilot study. These schools had been designated as district sites for students with behavior disorders. All students in the classrooms took home a consent letter asking permission for their participation in the pilot research. Four of the eight schools followed a one teacher and one teacher assistant model. Students in these classrooms worked with a full time special education teacher and a full time teaching assistant. One of the classrooms included six students; two classrooms had seven students, and one classroom had eight students participating in the study. The other four classes followed a two teacher model. Thus, students participating in these classrooms worked with two full time teachers. Consent to participate in the study was granted to seven students in two classes, eight students in one class, and ten students in the last class. In total, the pilot project consisted of 60 students and sixteen staff members, i.e., twelve teachers and four program assistants.

The pilot-study was conducted in order to assist in the further development of the definition of terms, as well as to determine the feasibility of the study in terms of recording behaviors while teaching, and to determine teacher willingness to participate. Initially, physical and verbal aggression were the only behaviors charted; nonetheless, teachers in the pilot study suggested that numerous inappropriate behaviors were not being recorded. Teachers participating in the pilot study, along with the researcher, redeveloped key terms, to best capture the inappropriate behaviors that were noted in the classroom. Teachers practiced the recording of behaviors and then discussed further revisions to ensure continuity in data collecting.

Teachers in the pilot study were observed by the researcher in order to determine any inconsistencies in the recording of behaviors. Also, teachers discussed their programs in order to prevent traditional groups from utilizing meta-cognitive strategies and meta-cognitive intervention groups from utilizing traditional intervention systems. During the pilot study, data were taken five days per week; however, teachers agreed that it would be easier if data were only required two days per week.

Finally, during the pilot study teachers were interviewed in order to determine their commitment to the study, thus ensuring that there was no bias with respect to commitment. In order to determine commitment, teachers were dropped from the study if they stated they were not interested, they would be unable to do the required data collection, they did not have any inappropriate behavior in their classroom, and they did not want the researcher to visit their classroom during class time. Four of the pilot study classrooms were dropped for the new research study. Two classrooms were dropped as teachers reported that they did not have any inappropriate behavior in their classrooms. One of these classrooms had been implementing a meta-cognitive strategy program and the other implemented a traditional program. Furthermore, one of the two teachers, implementing traditional programming, showed little enthusiasm for participating in the project. The third classroom was dropped from the final study because the teacher did not want the researcher to visit the classroom during class time. The teacher in this program was implementing a traditional program. The fourth classroom was dropped due to the lack of commitment to the study by staff members. Teachers in the fourth classroom initially stated they would implement a meta-cognitive strategies program; however, they did not complete the two day training sessions. Next, they decided to conduct a traditional program; however, failed to complete behavioral charting. Thus, four classrooms were left in the final study.

Two classrooms conducted meta-cognitive strategies instruction and two implemented traditional programming.

Sampling

The population was those students labeled as behavior disordered who were attending an elementary district site for behaviorally disordered students. The sample included 4 elementary behavior disordered sites within a large urban school system. Each classroom included 6 to 7 students, depending on class enrollment and consent to participate in the study (see Appendix B). Dunlap and Childs (1996) suggest that special education classrooms were the most cited settings conducting research with students presenting behavior disorders between 1980 and 1993. The special education classrooms selected for this study were initially chosen, based on a list of district sites for students with behavior disorders obtained from a large urban school system. Schools were contacted and asked if they would be interested in participating in the study. After schools agreed to participate, teachers were contacted and meetings were arranged.

A total of 26 students participated in the study. Thirteen students received meta-cognitive strategies intervention, and thirteen students received traditional programming. All students in the study were in segregated elementary classes for students with severe behavior disorders. Two classrooms followed a one-teacher and one-teacher assistant model, and two classrooms followed a two-teacher model. Each of these models were represented in the meta-cognitive strategies and traditional groups.

A large number of these students were bused to district sites and did not go to school in their own community. In order to meet the criteria for behavior disorders students, must display inappropriate behaviors over a minimum of six months. Students met the criteria if the behavior is considerably more frequent than that of most children of

the same age (The American Psychiatric Association, 1994). All students participating in the study were diagnosed as severely behavior disordered by chartered psychologists. Students were each given a consent/release form to authorize their participation in the study. The form was signed by their parents or guardians and returned to the school.

Teachers were asked which type of program they would like to develop in their classroom. The researcher assumes that the teachers were dedicated to the study and that they were competent. Two sites agreed to implement a meta-cognitive strategies intervention program. The remaining two sites implemented traditional intervention techniques. The teachers who implemented meta-cognitive strategies interventions were observed and trained in order to ensure that traditional intervention components were not being added to the intervention. Furthermore, the teachers who were implementing traditional intervention systems were observed in order to ensure that meta-cognitive strategies components were not added to the intervention. A two day training workshop was conducted to familiarize teachers, in the cognitive intervention group, with the S.P.E.L.T. method and implementation methods to utilize with students presenting behavior disorders (see Appendix C). Traditional teachers had the opportunity to attend workshops on behavior programming provided by consulting services.

Teachers were observed once per week at the onset of the study for the first four weeks. They were also observed during the pilot study. The observations took place during the days which teachers were recording inappropriate student behavior. Observations were conducted by the researcher, for a thirty minute period in each classroom, on a weekly basis for the first month of the study. Also, observations were conducted by the researcher during intermittent random visits to classrooms. These were unscheduled and unannounced visits which took place in all classrooms during the six

months of the study. The contact time and the amount of support provided was similar for both teacher groups, because the teachers who chose a traditional approach carried out their token economy and response cost programs with consultation from consultants within the school system. In-services and workshops were available through the consultants. The teachers who chose meta-cognitive strategy intervention techniques carried out their program with consultation from the researcher.

Instruments/Measures

In order to attain a measurement of actual acts of inappropriate behavior on charts, frequency measures were recorded two days per week (see Figure 1). These charts showed the number of inappropriate incidents for each individual student and the number of inappropriate incidents for each class. This instrument was chosen to provide knowledge of actual acts of inappropriate behavior rather than perceived measures through using rating scales as the only measure. Gunter and Denny (1996) suggest a research weakness when only questionnaires are used in classroom management strategies research; rather, they suggest the use of direct observation. Barkley believes, rating scales should not be used as a alternative for collecting of observational data in regard to children's problems. These frequency counts should have been a reliable and valid measure because it displays the actual acts of inappropriate behaviors per student and classroom. Nonetheless, some observer bias may have been present and inter-rater reliability may have been low; therefore, a meeting was held with all participants where a discussion took place regarding the scoring of aggressive behavior and rating scales. Teachers who agreed to participate in the study assisted in defining the behaviors to include behaviors that commonly occurred within their classrooms. As mentioned in a previous section, nine behaviors were noted. Definitions and descriptions of the nine behaviors follow.

Physical Aggression

Physical aggression was an offensive action directed toward another person or oneself with intent to harm. This included hitting, kicking, spitting, biting, pinching, scratching, hair pulling, and passive-aggressive behaviors. Each time a child displayed any one of these behaviors, it was counted as one aggression. If a child displayed consecutive acts of aggression within a two minute time frame toward one individual, it was counted as one act of aggression. After the two minute interval, if the behavior persisted, it was counted as a new aggression. If the child displayed an act(s) of aggression toward another individual within the two minute time frame, it was counted as another aggression.

Verbal Aggression

Verbal aggression was a verbal put-down or threat directed towards another person or themselves. For example, "You stupid idiot." Gestural aggression was also in this category, for example, "giving the finger". Also, disrespect and talking back were counted as verbal aggressions, for example, to show blatant disregard or inconsideration toward an authority figure. Furthermore, this included swearing and yelling. Each time a child displayed any one of these behaviors, it was counted as one aggression. If a child displayed consecutive acts of aggression within a two minute time frame toward one individual, it was counted as one aggression. After the two minute interval, if the behavior persisted, it was counted as a new aggression. If the child displayed an act(s) of aggression toward another individual within the two minute time frame, it was counted as another act of aggression.

Defiance

Defiance was a student's refusal to do what was asked by a staff member within a fifteen second time frame.

Calling Out

A callout was a student failing to raise his/her hand before speaking in the classroom when utterances were inappropriate and had no functional use.

Tattle-taling

Tattle-taling was a student's discussion of another student's inappropriate behavior when there was no threat of physical, sexual, or mental harm involved in the incident.

Whining

Whining was a student's use of an age inappropriate tone of voice: to utter a high pitched, unusually nasal, complaining cry or sound.

Temper Tantrum

A temper tantrum was a sudden outburst of anger which was visually displayed by the student when there was no intent to physically harm himself/herself or others. If a child displayed this behavior within a two minute interval, it was counted as one temper tantrum. If the behavior persisted after the two minute interval, it was counted as a new temper tantrum. For example, if the temper tantrum was ten minutes long in duration, it was counted as five temper tantrums.

Out of Seat

Out-of-seat behavior consisted of a student getting out of his/her seat for a purpose that was prohibited by the teacher while the teacher was presenting a lesson, for example, a child getting out of his/her seat to see who was at the door without being asked by the teacher, or a child getting out of his/her seat to go to the window to see the vehicles outside.

Running Away

Running away was student leaving the assigned area without teacher permission. The assigned area was a classroom, gymnasium, playground, lunchroom, school grounds, or any other area within the school premises.

All teachers participating in the study were well trained in the definition of terms and how to record specific behaviors. Teachers met with the researcher to discuss the method of observational recording. For example, teachers were shown the data form and asked to practice with hypothetical situations. Also, teachers were asked to record inappropriate behaviors during class time. At the same time, the researcher recorded inappropriate behaviors, and results were compared. This type of observational training took part during the six month pilot study as well as during the onset of this research study. The recording system that was developed approximates first letters of the target behavior; therefore, the codes were easily recognizable and quick to record. For example, defiance is recorded as a D on the behavioral chart. All behaviors are defined above. Discussions focused on hypothetical situations and how behaviors were recorded. Event recording systems were utilized in order to establish inter-rater reliability. All of the target behaviors that occurred during the specified time period were recorded by the teacher and researcher. Following the observation period, results were compared. The researcher's data was assumed to be correct. The data obtained from the teachers were then compared. More specifically, the events were tallied, and the score was calculated by dividing the smaller score by the larger score and multiplying by 100. For example, if the researcher counted ten inappropriate behaviors and the teacher counted eight inappropriate behaviors the score would be 80%. The researcher and teachers conducted inter-rater reliability checks during

the pilot study to ensure a high degree of inter-rater reliability (a minimum of 75% agreement). Furthermore, inter-rater reliability was assessed once per week for a thirty minute time period at the onset of the study for the first four weeks, and intra-rater reliability, utilizing a video camera, was assessed once in the first month in two of the four classrooms where video taping was acceptable by teachers, school administration, and parents. Specific inter-rater reliability results can be seen in Table 1.

Russell A. Barkley's Home Situations Questionnaire and Russell A. Barkley's School Situations Questionnaire were completed two times during the study (pre and post). The researcher was unable to discover any alternative standardized measures of generalization that looked at the home and school generally; therefore, the Barkley's questionnaire was utilized for the purpose of this study. Furthermore, Barkley's questionnaires are often used in research with students presenting behavioral difficulties. The Barkley's Questionnaires were used in the study to assess generalization across different times and settings. These questionnaires are related to the setting in which the problematic behavior is occurring, rather than the types of problematic behavior. The questionnaires reveal "the degree to which self-control is a problem, and the setting most likely to be problematic for the children. [Furthermore], rating scales may be helpful in assessing whether treatment has brought the children's behavior closer to normal" (Barkley, 1981, p. 45). Barkley (1981) suggests it is a "useful supplement" to the Conners' Rating Scale. Barkley's Questionnaires ask the parent or the teacher, depending on the scale, to rate the child's behavior as problematic during certain situations. More specifically, the questionnaire completed by the parents encompasses sixteen situations including "mealtimes," "getting dressed/undressed," "when visitors are in your home," "in public places," "at bedtime", and other contexts. The school situations include "during free

Table 1

Inter-Rater Reliability

	Meta-Cognitive		Traditional	
	Group 1	Group 2	Group 1	Group 2
First	90%	85%	93%	94%
Second	88%	96%	75%	100%
Third	100%	87%	89%	100%
Fourth	100%	100%	92%	100%

playtime in class," "at recess," "in the hallways," "in the bathroom," "on field trips," "during special assemblies," "on the bus," and other settings.

Student Interviews were conducted pre- and post- intervention program. The Structured Interview was developed by the researcher. The purpose of the interview was to determine any changes that had occurred in the perceived use of strategies, the awareness of physiological body changes, and students' perceptions of their ability to control physiological body changes. For example, students were asked, "How does your body feel when you get angry?" and "What do you do when your body starts to feel that way?" (See Appendix A for complete Structured Interview.) The questions were read to the students by their teachers. Teachers asked the questions and then waited for student responses, without providing any prompts to answer in a specific manner. Each interview took approximately five minutes per student. Each interview was recorded and later transcribed to save teacher time.

The Conners' Teacher Rating Scale was selected as a measure of student behavior. This scale is widely used with students presenting behavior disorders in the large urban school system and was familiar to the teachers participating in the study. Furthermore, there is evidence to suggest that the Conners' Rating Scale is widely used (Kramer & Conoley, as cited in Burros). The Conners' rating scale is used to "characterize the behaviors of a child and compare them to levels of appropriate normative groups" (Conners, 1990. p. 3). For example, items include: "constantly fidgeting," "hums and makes other odd noises," "inattentive, easily distracted," "no sense of fair play," "defiant," and others. The Conners' is a 39-item instrument which rates responses as to 0, 1, 2, or 3, e.g. where 0 equals "not at all" and three equals "very much". The Conners' Teacher Rating Scale reports moderate to high test-retest reliability (.33 to .91), moderate to high

inter-rater reliability (.23 to .94), and adequate internal consistency (alpha coefficients ranging from .61 to .95). The lower results were found in parent-teacher; this does not affect the dissertation study because only teacher scales were used. "Validity evidence for the Conners' Rating Scales is substantial" (Martins, as cited in Burros). Other researchers believe moderate construct validity is displayed through correlations found with other instruments and adequate convergent but not discriminant validity has been established (Oehler-Stinnett, as cited in Burros). Research has shown that the Conners' Rating Scale is related to the DSM III according to ADD criteria; as well as having a high degree of association with observed and rated behaviors as a screening measure for hyperactivity, inattentiveness, and defiance (Conners, 1990). The criteria in the area of behavior disorders has only changed slightly between the DSM III and the DSM IV.

Data Collection Procedure

Each teacher recorded the frequency of nine behaviors, as described in an earlier section, two days a week, for a total of three days of pre-test data. Post-test data included the frequency of the nine behaviors two days a week for a total of five days. The difference in the number of days pre- and post-intervention took into account the greater variety of activities taking place during the last month of school. The author believed that this might influence the data; thus, including more days and calculating a mean should have proven more reliable. Data were collected by teachers on all of the students in their classroom. The data sheet included information on inappropriate behaviors for the full school day on the recording dates. The inappropriate behavior was recorded per student per classroom. The days of recording were selected according to a table of random numbers.

The Barkley's School Situations Questionnaires and Conners' Teacher Rating Scales were completed by the teacher pre- and post-intervention. The Barkley's Home Situations Questionnaire was completed by the parents pre- and post-intervention.

Structured Interviews were recorded on audio tapes and transcribed at a later time in order to save teacher time.

Scoring

The daily behavior charts were used to count the number of inappropriate behaviors. More specifically, the number of inappropriate behaviors was tallied according to the type of inappropriate behavior using the daily behavior charts. Then, a sum of the total number of inappropriate behaviors was recorded for each student in each classroom on each of the record keeping dates. For example, one student might have displayed two acts of physical aggression from 9:30 to 10:00 a.m., four call outs between 11:00 and 11:30 a.m., three out-of-seat behaviors between 1:00 and 1:30, one physical aggression between 2:00 and 2:30, as well as three call outs between 2:30 and 3:00. Initially, results would be tallied for each type of behavior; physical aggressions (3), call outs (7), and out-of-seats (3). Then, a sum of all the inappropriate behaviors would be taken for the student; thus, the total would be 13. Each students' behaviors were counted and placed in SPSS for data analysis.

The Russell A. Barkley School Situations Questionnaires and the Russell A. Barkley Home Situations Questionnaires were scored according to the number of problem areas. For example, a student might have nine situations where behavioral difficulties occurred and three situations where no behavioral difficulties occurred. The number of situations which had problematic behaviors (9) were listed pre- and post-intervention. The sum of problematic areas were placed into SPSS for further analysis.

The Conners' Teacher Rating Scales were scored according to scoring criteria outlined in the manual. Each student was given a T-Score on seven different scales. Pre- and post-test results were entered into SPSS for further data analysis.

Structured Interviews were transcribed by a professional typist after being tape recorded by the teachers. Students were asked, "How does your body feel when you get angry?" and "What do you do when your body starts to feel that way?" Transcripts were checked for errors and edits were made as necessary. Finally, transcripts were reviewed by the researcher. From the initial review of the first question, two themes appeared to emerge. Student responses could be classified as physically aggressive or non-aggressive. Examples of student responses to the question, "How does your body feel when you get angry?" that were categorized as physically aggressive, include, "Like I'm ready to tear the school apart," and "It feels like throwing somebody through the wall and trashing them or pounding their head in." Examples of student responses that were classified as non-aggressive are, "Really funny," "Nervous," and "Feels hot." From this initial review of the second question three themes appeared to merge. Student responses appeared classifiable as positive, negative, or neutral. Examples of positive themes to the question, "What do you do when your body starts to feel that way?" were, "I count to ten," "Take deep breaths," and "Relax." Negative responses included "Pound on walls" and "I beat people up." Lastly, examples of neutral responses were "Nothing" and "I don't know." Student answers were then categorized according to themes. These categories or themes were identified by the researcher. Student responses were then placed into themes, with the assistance of two teachers presently working with students presenting behavior disorders. Further information on specific analysis procedures is found in the data analysis section of the thesis.

FileMaker Pro

The data base program will allow the researcher to continue to study the behavior of the students in this study. FileMaker Pro can be viewed as a data base management system on top of a data base system. This procedure ensures data is easily accessible. Storing data in this manner allows the researcher to organize and analyze the information in many different ways. Data can be arranged after initial questions have been analyzed in order to compensate for ad hoc questions. All possible relationships between data can be explored utilizing this system. Figure 9 displays an entity relationship model for the study. Each entity, or field, is represented within the figure inside a box. This shows that students, intervention, diagnosis, testing, site, teacher(s), teacher assistants, data, intervals, and behaviors are all considered important fields within the study. Each of these fields has certain properties which are referred to as records. For example, each student has a name, identification number, age, and year in school. Thus, the student is the field and the records of that field are name, identification number, age, and year in school. Fields are related in some way to other fields. Some of these relationships are mandatory and other relationships are optional. For example, a student must have a diagnosis to be placed in a district site for behavior disordered students; therefore, the student entity is linked to the diagnosis entity with a solid line showing a mandatory relationship. On the other hand, the site may or may not have a teacher assistant; therefore, the broken line represents an optional relationship. Some sites have two teachers and some sites have a teacher and a teacher assistant. For further clarification of the FileMaker Pro 3.0 program refer to FileMaker Pro User's Guide available through Claris Corporation.

This data base allows the researcher to view the data in different ways. For example, specific students can be pulled out within the data base. The researcher may

choose to view all the records of students who displayed more than ten inappropriate behaviors in one day during the post-test days. This data base allowed the researcher to look at these students within seconds. Furthermore, there is an option to create reports that may be displayed on the computer or printed. This allows the researcher to conduct seminars and display actual behaviors of students in the study. It becomes evident that the options left to explore are extremely vast. The researcher hopes to continue with ad hoc questions that arise as a result of further discussions in the field. This rich data base has many avenues which may be further explored. Furthermore, other variables will be studied using the FileMaker Pro data base system. As in all research, questions are left unanswered. Scholarly questions of the research will continue to be pursued utilizing the data base system. The data bank includes information on those students who have enrolled in counselling, those living with biological parents, those in foster treatment or living in single parent families. Furthermore, academic standing of students in reading and mathematics pre- and post-intervention may be addressed. Future research may examine the relationship between inappropriate behavior and academic standing. Also, research may examine whether or not counselling appears to have an effect on decreasing inappropriate classroom behavior and the generalization of that behavior. The types of medication students are administered may be reviewed in relation to inappropriate behavior.

Intervention Procedures

Meta-Cognitive Intervention Program

The three-phase strategic model of S.P.E.L.T. was emphasized for the meta-cognitive intervention program. The S.P.E.L.T. methodologies have proven to be successful in transference across different times and settings.

Strategies Program for Effective Learning and Thinking (S.P.E.L.T.)

The S.P.E.L.T. program is based on cognitive theory and presents a specific approach to learning and instruction. The S.P.E.L.T. methodology is taught in a three phase model of instruction. Phase one is the actual instruction of the strategy. This first phase includes direct strategy instruction where students learn how to apply the actual strategy. Mulcahy et al. (1987) have suggested seven key instructional steps, developed by Deschler and others, which may be utilized during phase one of the instruction. The first step is labeled, "Motivation and Measurement." During this step it is important for the teacher/facilitator to assess the students' present level of functioning in regard to strategy usage. The second step is the "Sell Job." This is a vital stage of the instruction. Students must feel a strong desire or need to learn the strategy. Without the "Sell Job" students may not feel the strategy is necessary for them to use. "Modeling" is the third step of phase one instruction. During this step, teachers utilize "think aloud" to help model strategy use to students. The fourth and fifth steps are "Drill and Practice". Teachers drill students for memorization, and students practice strategies in activities that do not possess any difficulty, to help ensure a positive experience. Students are not expected to learn a strategy embedded in content that is difficult for them. During the sixth step, the teachers give the students "Feedback and Reinforcement." Also, teachers can encourage peers to give feedback. This feedback should be positive and constructive. The final (seventh) step is the "Post-test" the actual application of the strategy. Phase Two of the S.P.E.L.T. methodology allows students to develop their own strategies. After directly teaching the strategy (phase one), students are asked to evaluate the strategy, evaluate themselves, and evaluate the task. This allows students to discuss positive and negative aspects of the strategy. Also, students are encouraged to discuss any interesting components of the

strategy. Students are encouraged to redevelop strategies in order to customize the strategy to meet their individual needs. During phase three of the S.P.E.L.T. methodology, students learn to generalize strategy usage across different settings and different times. The S.P.E.L.T. manual describes specific methodologies that can be utilized with students to help facilitate the process of generalization. This phase of the instruction is more flexible that either phase one or two. Teachers must remember to individualize lessons to meet the needs of their students.

Intervention Sequence

The following components were built into the instruction:

- Positive Self-Talk
- Relaxation/Visualization
- Goal Setting
- Problem Solving
- Self-monitoring Physiological Body Changes.

These components were the necessary precursors to the BRAG strategy which was taught once the students were familiar with all the components (See Appendix D for a visual representation of the strategy). BRAG is the first letter mnemonic for a relaxation strategy. More specifically, the B stands for "breathe deeply and slowly;" R refers to "relax all muscles;" A indicates "allow brief visualization of a pleasant setting;" finally, G refers to "go back to task." The BRAG strategy was originally developed by D. Peat (1987). It was designed to use as a "shortened version" of a longer muscle relaxation exercise. The BRAG strategy was initially developed for students to use before a class presentation or before an examination. In order to fully understand the program, a unit plan and skills which facilitate self control are provided (See Appendix E).

Instructional Methodology

Positive self-talk.

First, strategy instruction focused on positive self-talk. Due to the nature of behavior disordered students, negative statements contribute to their lack of self-confidence. These students often have a very low self-esteem and found it difficult to say good things about themselves. Lessons were designed to encourage students to talk to themselves out loud as they went about daily routines. Teachers modeled self-talk on a daily basis. Students needed to be encouraged to reinforce themselves and say good things to themselves: "I'm a good person!," "I can do this!," "Good for me," "I'll try!," "I'm doing a super job!"

Teachers were given a package of suggested positive self-talk activities that they used to choose lessons for the class. Also, if teachers designed new activities, they shared them with the researcher who distributed them to meta-cognitive strategy intervention programs.

Relaxation/Visualization.

Visualization is generally one of the strategies used for relaxation. It allowed students to go to a special calming place in their mind and come back refreshed and relaxed. Students also learned breathing techniques and muscle relaxation. Detailed lessons are described in Relaxation in the Classroom written by the researcher. Teachers were given the relaxation manual to assist them in lesson implementation. These strategies were used as an effective relaxation strategy, once students began to recognize the physiological body changes occurring when they became angry.

Goal setting.

Goal setting is generally a strategy used to plan, monitor, and evaluate behavior. Goal setting is a process which allows students to set individual goals, to become more involved in their learning, and achieve a sense of satisfaction once the personal goal has been achieved. Goal setting gave students a new means to deal with the challenges that they faced on a daily basis. The students discussed possible goals. Individual attention was given to each student so that s/he could modify goals in order to make them achievable. Students were encouraged to make their goals concrete rather than abstract. Lessons focused on the need for making goals realistic, attainable, relevant, and time specific. Teachers were given plans which suggested lessons pertaining to the area of goal setting.

Problem solving.

This strategy gave students an alternative method of dealing with problems that they encountered. Often behavior disordered children made poor choices and used inappropriate means, such as physical and verbal acts of aggression, to solve their problems. Teaching students appropriate problem solving techniques helped them become responsible and take ownership of their problems. Having students stop and think about the choices before acting was a useful skill. Students asked themselves the following four questions when confronted with a problem:

i) What is my problem?

ii) How can I do it?

iii) Am I using my plan?

iv) How did I do?

This strategy allowed students to calm down and think before acting. Teachers were given posters to display in their classrooms. Also, lessons were suggested in regard to how to teach the four step problem solving model.

Physiological body changes.

The recognition of one's physiological body changes is a process which involves self-monitoring. Behavior disordered students demonstrate difficulty controlling their anger, often resulting in aggression. Lessons are described in an unpublished article, Self-Monitoring in Relation to Anger Control for Students Experiencing Behavioral Difficulties, written by the researcher. Students must be taught coping strategies to ensure suitable means of dealing with anger. Teachers were given activities to complete with their students. All materials were given to teachers in advance.

Transfer of training.

It was vital to retrain the students' affective domain through strategic learning, which allowed students to begin to develop an internal locus of control. Teachers facilitated peer support networks, in which peers assist students who had not yet mastered strategies; and these students served as role-models. Students demonstrated mastery of the skill before generalization and maintenance were assessed. Ample time was given to students to practice skills. Video tape was used as a tool to facilitate the visualization process. Students may have found it easier to visualize after watching themselves on video, and teachers may have found this an effective self-evaluation method. Teachers facilitated role-play; students were involved in many different types of role plays encompassing different locations and times. Intermittent reinforcement, powerful in that students are unaware of when to expect praise, was used with students. Teachers attempted to involve parents, allowing students to practice techniques in different settings and across

time. Students developed goal setting strategies, working towards setting reasonable and attainable goals. A rationale was provided to students describing the benefits of generalization. Discussions also focused on attributional beliefs. Students needed to begin to gain the awareness that success is associated with effort and failure is associated with lack of effort. In order to assist in the generalization and maintenance of strategy instruction, students were provided with techniques that would begin to facilitate this process.

Traditional Programming

Traditional programs were not rigorously designed because teachers presently implementing token economy / response cost systems continued with those programs and procedures. These programs were designed in collaboration with behavior consultants from the a large urban school system. The traditional programs also included a component of social skills training. Prior and following the intervention, the particulars of strategies and procedures utilized for each program were documented.

Both of the traditional programs utilized a point system which included a response cost with the students. In one setting, the day was divided into 20 minute segments. During each segment all students had the opportunity to earn two check marks. One mark was earned for on task work and the other for appropriate behavior. The students had to earn 30 out of 34 checks in order to have a "star" day. If they earned their 30 out of 34 checks, they were given a candy or a token at the end of the day. In order to earn a star week (and a grab bag), the students had to earn four out of five star days. If students received three out of four star weeks in a month, they earn a McDonalds Happy Meal. In addition to the star days, weeks, and months, students had the opportunity to earn "scholar dollars" throughout the day for on-task behavior and for completing assignments. At the

end of the week, students banked their money into an account. At the end of each month, students were allowed to trade their dollars in for various items. If students were escorted, restrained, or suspended during the month, they lost their privilege to trade.

The second traditional program also consisted of a point system with a response cost component. In that setting, the day was divided into activities such as arrival at school, circle time, recess, and others. Students were able to earn points for specific behaviors. For example, students received one point if they hung up their coat, put their shoes in the correct space, and had a neat area. They received a second point for sitting quietly in their desk with their shoes on their feet. A third point was given if they brought back their daily communication book. Also, they received a point for completed homework. Points were given throughout the day for effort, attitude, not invading others, personal space, listening, cooperating, sharing, using polite manners, ignoring others having a problem, being a good friend, being helpful, learning and letting others learn, walking away from difficult situations, and so on. At the same time, points were given for on-task behavior. Students lost points for inappropriate behaviors, such as put-downs, swearing, throwing things, and time-out. If students had to be transported to time-out, more points would be lost.

Group Commonalties

Students in all programs participated in social skills training, which taught students to use appropriate behaviors when expressing emotions. In order to change the existing behavior, students were given a replacement behavior. For example, telling students that their behavior is inappropriate and failing to replace it would not change the negative behavior and would lead to student frustration and anger. Students were encouraged to

practice the new behavior in numerous locations and at different times. Social skill training is vital and was given ample time in all programs.

In summary, social skills training was common to both groups of students. At the same time, one group of students received meta-cognitive strategy instruction, and the other group received traditional programming which included a token economy system.

The next chapter reviews results of the study. Data analysis is reported in regard to the Russell A. Barkley School Situation's Questionnaire, Russell A. Barkley Home Situation's Questionnaire, the Conners' Teacher Rating Scale, as well as frequency of inappropriate behavior. Common themes are addressed in an informal qualitative analysis of two of the questions on the Structured Interview developed by the researcher.

CHAPTER V

RESULTS

The results of pre- and post-test data will be discussed in relation to the Russell A. Barkley's School Situations Questionnaire, Russell A. Barkley's Home Situations Questionnaire, the Conners' Teacher Rating Scale, and the frequency of inappropriate classroom behavior. Structured Interviews were reviewed on an informal basis. As part of this procedure, themes were explored and noted. Finally, concluding remarks will address the data as a whole. The reader should note that all figures do not have a true zero point and differences may be visually accentuated due to scaling.

Barkley's Questionnaire Results - Number of Problem Settings at School

The mean number of problem settings derived from Russell A. Barkley's School Situations Questionnaire was subjected to a 2(group) x 2(pre-post) ANOVA with the last factor repeated. No significant main effects were observed for groups or time. Table 2 presents results of the repeated measures ANOVA.

Table 2
Analysis of Variance with Repeated Measures for Russell A. Barkley's School Situations Questionnaire

Source	df	MS	F	p
Factor A Groups -Traditional/Cognitive (Between)	1, 24	8.63	.06	.815
Factor B Time - Pre- & Post-Intervention (Within)	1, 24	.48	.19	.665
Interaction Groups x Time	2, 48	10.17	4.08	.055
MS Error	24	2.49		

Group Means	Pre	Post
Traditional	7.69	8.38
Cognitive	8.77	7.69

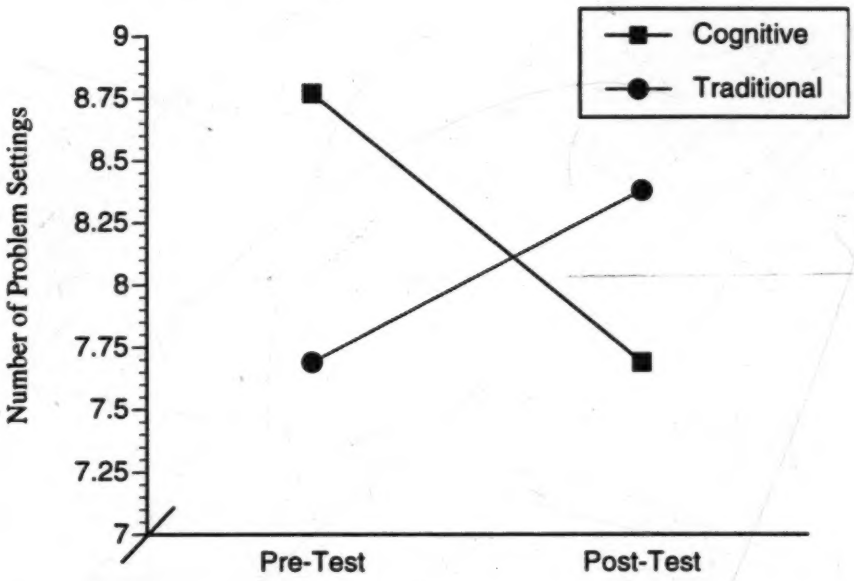

Figure 2.
Interaction of Groups by Time for Number of Different Problem Settings in School.

A significant interaction was observed ($F = 4.08$; $df = 1, 24$; $p < .05$). Figure 2 provides a visual representation of the interaction obtained. Visual inspection of Figure 2 indicates that there is a difference in the group mean of pre- and post-test results between the meta-cognitive and traditional group. The number of problem settings pre- and post-intervention is influenced by the type of programming received by the students in this study. Meta-cognitive strategy instruction shows a greater decrease in the number of problem settings from pre- to post-testing; traditional programming shows a slight increase in the number of problem settings in the school. An in-depth examination of the data reveals that, in fact, some students in the traditional programs had similar pre- and post-test results, and others actually increased in the number of problem settings. At the same time, in the meta-cognitive group, some students had similar pre- and post-test results and the other students decreased in the number of problem settings. Results of this study reveal that students display a greater decrease in the number of problem settings in school situations after receiving meta-cognitive strategies instruction than in traditional programs.

Barkley's Questionnaire Results - Number of Problem Settings at Home

The mean number of problem settings derived from Russell A. Barkley's Home Situations Questionnaire was subjected to a 2(group) x 2(pre-post) ANOVA with the last factor repeated (Cognitive $n = 13$, Traditional $n = 13$). No significant main effect for groups was observed. Table 3 presents results of the repeated measures ANOVA. A significant main effect was observed for time (pre and post) ($F = 7.31$; $df = 1, 24$; $p < .012$). There was a general decrease in the number of problem settings from pre- to post-testing. A significant interaction was also observed ($F = 7.31$; $df = 1, 24$; $p < .001$). Figure 3 provides a visual representation of the interaction obtained between the two groups with respect to time. When comparing the two groups, it becomes apparent that

both groups started out with relatively the same number of problem settings in the home. Results show a significant difference in the amount of generalization that is apparent in the home pre- and post-intervention. More specifically, students enrolled in meta-cognitive programs appear to generalize their appropriate behaviors into their home situations at higher rates than do the students taking part in traditional programs.

Table 3
Analysis of Variance with Repeated Measures for Russell A. Barkley's Home Situations Questionnaire

Source	df	MS	F	p
Factor A Groups - Traditional/Cognitive (Between)	1, 24	10.17	.61	.443
Factor B Time - Pre- & Post-Intervention (Within)	1, 24	8.48	7.31	.012
Interaction Groups x Time	2, 48	16.17	13.94	.001
MS Error	24	1.16		

Group Means	Pre	Post
Traditional	9.62	9.92
Cognitive	9.85	7.92

There is a significant decrease in the number of problem settings at home when analyzing pre- and post-test results in the meta-cognitive strategies groups. At the same time, there is a slight increase in the number of problem settings at home when analyzing pre- and post-test results in the traditional groups. This would suggest that students were more likely to generalize appropriate behavior across settings when exposed to meta-cognitive strategies instruction as opposed to traditional programs in this study.

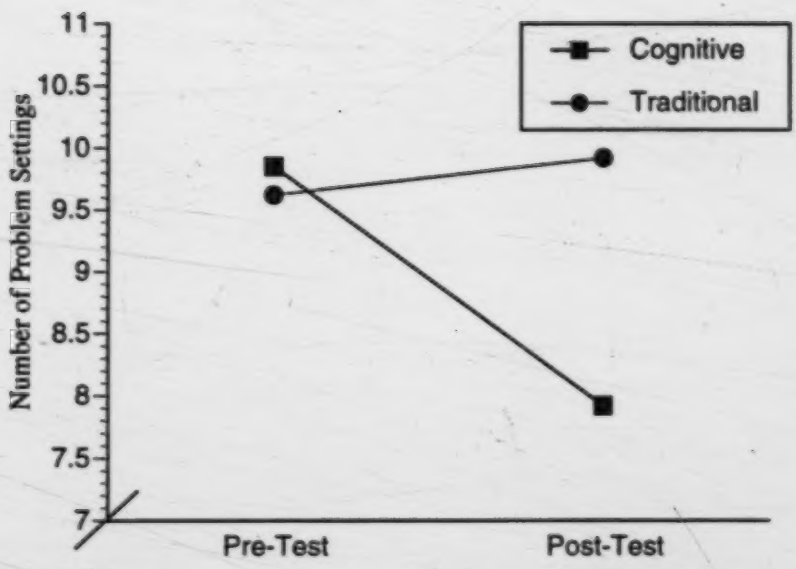

Figure 3.
Interaction of Groups by Time for Number of Different Problem Settings at Home.

Conners' Teacher Rating Scale Results

The Conners' Teacher Rating Scale includes six scales: hyperactivity, conduct problem, emotional indulgence, anxious-passive, asocial, and daydream-attention. It also includes a hyperactivity index. Teachers rate behaviors according to their perception. T-scores derived from the Conners' Teacher Rating Scales were subjected to 2(group) x 2(pre-post) ANOVA with the last factor repeated. No significant main effects for groups were observed on any of the six scales; however, significant differences main effects were observed on three scales for time (pre and post) anxious-passive scale ($F = 7.20$; $df = 1, 24$; $p < .013$; conduct problem scale ($F = 8.04$; $df = 1, 24$; $p < .009$); and on the emotional indulgence scale ($F = 10.96$; $df = 1, 24$; $p < .003$). There was a overall general decrease in the T-scores from pre to post on the three scales.

A significant interaction was also observed on the anxious-passive scale ($F = 5.48$; $df = 1,24$; $p < .028$). This scale "includes a number of behaviors related to anxiety and passivity. Children in the problem range tend to be easily led, lack leadership, act submissive, be shy or fearful and overly anxious to please" (Conners, 1990, p. 3). Figure 4 shows a visual representation of the interaction. Mean scores in anxious-passive behaviors decreased from 58.5 to 51.7 in the meta-cognitive group and decreased from 57.1 to 56.7 in the traditional group indicating a significantly greater decrease in the meta-cognitive group. T-scores on this scale decreased in both groups; however, a visual scan of figure 4 indicates that the meta-cognitive strategies group displayed an overall greater decrease. A significant interaction was also observed on the emotional indulgence scale ($F = 9.70$; $df = 1, 24$; $p < .005$). Figure 5 displays a visual representation of the interaction. The figure displays a decrease in the T-scores in the meta-cognitive strategies group and an

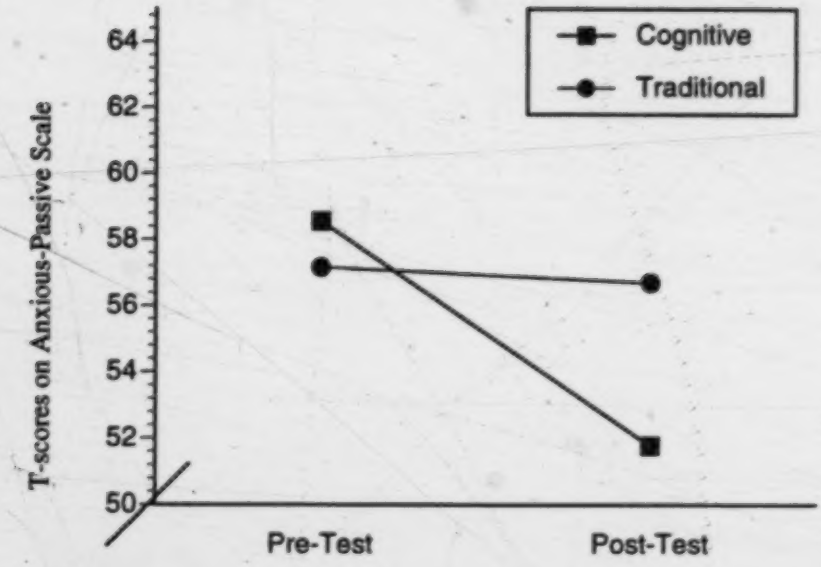

Figure 4.
Interaction of Groups by Time for Scores on the Anxious-Passive Scale (Connors' Teacher Rating Scale).

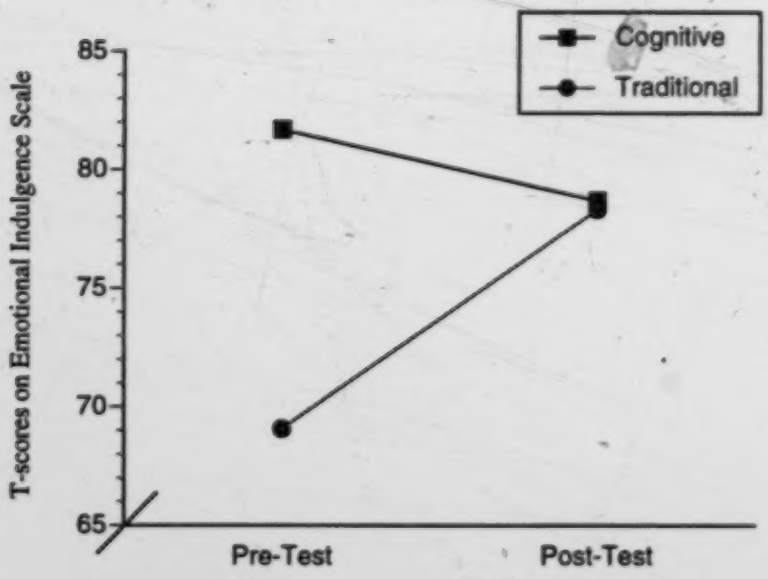

Figure 5.
Interaction of Groups by Time for Scores on the Emotional Indulgence Scale (Connors' Teacher Rating Scale).

increase in T-scores in the traditional group. This scale "includes the problems that the child's demands must be met immediately, over sensitivity or sadness, quick or drastic mood changes, temper outbursts and unpredictable behavior and being stubborn" (Conners, 1990, p. 3). On the emotional indulgence scale mean scores decreased from 81.7 to 69.1 in the meta-cognitive strategies group and from 78.7 to 78.3 in the traditional group. A third significant interaction was noted on the hyperactivity scale($F = 4.24$; $df = 1, 24$; $p < .051$). Figure 6 displays a visual representation of the interaction. On the hyperactivity scale, mean scores decreased from 68.6 to 62.8 in the meta-cognitive strategies group and increased from 65.2 to 65.5 in the traditional group, indicating that students in the meta-cognitive strategies group displayed a significantly greater decrease in T-scores; whereas the traditional group had a slight increase in the amount of hyperactive behavior that was displayed pre- and post-intervention. The hyperactivity scale "measures a set of problem behaviors such as constant fidgeting, making odd noises, being easily frustrated, having poor coordination, being restless or excitable, having a short attention span, daydreaming, disturbing other children, being quarrelsome, acting 'smart', being easily led, teasing other children, being impudent, making excessive demands for the teacher's attention, and being uncooperative. Children in the problem range on this scale have a number of behaviors which interfere with efficient and orderly operation of the classroom" (Conners, 1990, p. 3).

A significant interaction was also observed on the hyperactivity index ($F = 7.21$; $df = 1, 24$; $p < .013$). Figure 7 provides a visual representation of the interaction obtained between the groups with respect to time. When comparing the two groups, it becomes apparent that the T-scores, for the students in the meta-cognitive strategy intervention

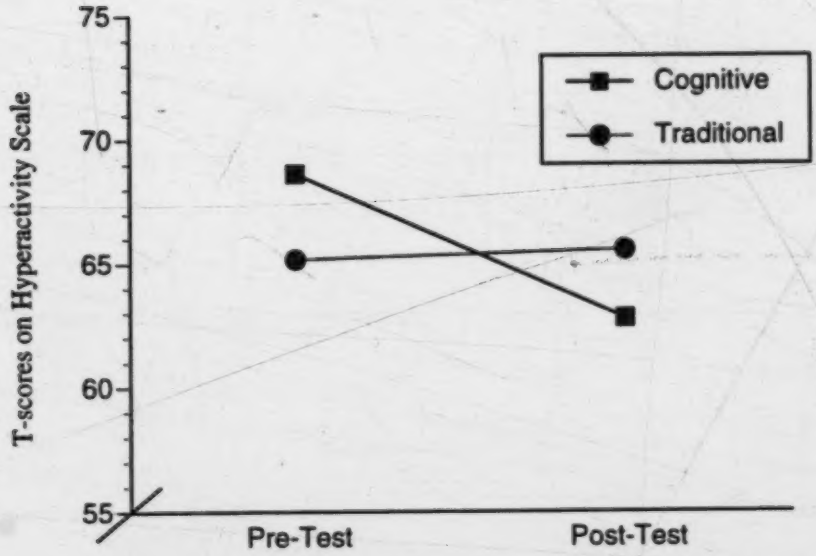

Figure 6.
Interaction of Groups by Time for Scores on the Hyperactivity Scale (Connors' Teacher Rating Scale).

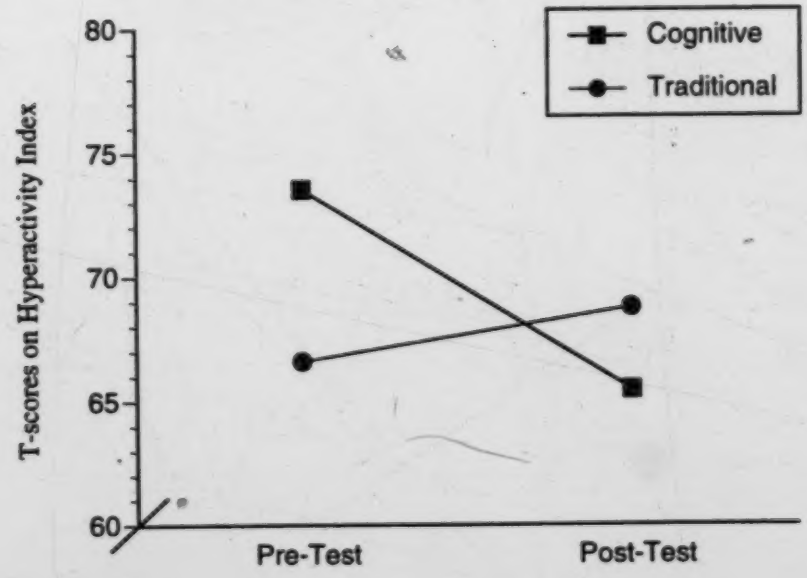

Figure 7.
Interaction of Groups by Time for Scores on the Hyperactivity Index (Connors' Teacher Rating Scale).

group, displayed a significant decrease pre- and post-intervention, when compared to the traditional group scores on the hyperactivity index. The hyperactivity index "is a general dimension of problems. Children who score in the problem range on this scale will tend to score high on other scales. The high scorer tends to constantly fidget, is easily frustrated, requires that his or her demands be met immediately, is restless or overactive, is excitable or impulsive, is inattentive or easily distracted, fails to finish things, has a short attention span, cries often and easily, disturbs other children, has quick mood changes and may have temper outbursts" (Conners, 1990, p.3). Scores on the hyperactivity index decreased from a group mean of 73.5, in the pre-test results for the meta-cognitive strategy group, to 65.5 post-test results. The traditional group means increased from 66.6 to 68.8 indicating that students in the traditional programming group displayed increases in the hyperactivity index when pre and post-test results were compared. These scores show a significantly greater decrease in the meta-cognitive strategy group.

There were no significant differences between either of the groups on the other two scales (daydream-attention problem and asocial behavior). Results indicate that conduct problems decreased in both groups; nonetheless, results do not display a significant interaction . Also, a visual scan of the data indicates decreases were noted in both groups in asocial behavior; however, significant differences between groups were not seen. Table 4 shows a visual representation of T-scores on all Conners' scales pre- and post-intervention for meta-cognitive strategy and traditional groups. A visual survey of the data suggests that the meta-cognitive strategy group displayed decreases in T-scores on all seven scales when comparing pre- and post-test results; however, the traditional group showed decreases in three scales and one index. At the same time, the traditional group displayed some increases in T-scores pre- and post-intervention on three scales. Results on the

Conners' Teacher Rating Scale indicate that although meta-cognitive strategies instruction appears to significantly reduce inappropriate behavior, students still display a relatively high level of inappropriate behavior. The students in this study have severe behavioral difficulties. It would not be possible to completely eliminate behaviors in a six month period. These students still display higher levels of inappropriate behavior than their same age peers.

Table 4
Mean T-Scores on the Conners' Teacher Rating Scale

	Cognitive		Traditional	
Scale	Pre-Test	Post-Test	Pre-Test	Post-Test
Hyperactivity *	68.6	62.8	65.2	65.5
Conduct Problem	78.7	71.1	77.3	72.6
Emotional Overindulgent *	81.7	69.1	78.7	78.3
Anxious-Passive *	58.5	51.8	57.2	56.7
Asocial	61.9	60.7	65.9	64.0
Daydream-Attention Problem	60.5	59.3	60.5	63.8
Hyperactivity Index *	73.5	65.5	66.6	68.8

* indicates scales showing significant differences (< .05) pre- and post-intervention

Perhaps, the significant difference between groups can be interpreted as due to the facilitation of an internal locus of control in students within the meta-cognitive strategies group. For example, as students become more internally guided, certain behaviors change. Thus, behaviors such as emotional-indulgence, anxious-passive, and hyperactivity appear to decrease. Another possible explanation is that the specific meta-cognitive strategies that were used in the intervention may load more highly on specific types of behaviors; perhaps, if other meta-cognitive strategies were taught different, results might have been different. For example, perhaps, if the meta-cognitive intervention had included a component on teaching students how to self-monitor off-task behavior, there might have been a decrease in T-scores on daydream-attention.

Students who received traditional programming displayed an increase in both hyperactivity and hyperactivity index, when comparing pre- and post-test group means. Perhaps these differences were due to the nature in programming. Some educational professionals may suggest that students who receive external rewards, such as candy, may display greater levels of hyperactivity; however, this view is not validated in the literature. Others may believe that the anticipation of a reward may increase the excitement level of the students. This may be interpreted as an increase in hyperactive behavior.

Significant differences were noted within groups over time on the conduct problem scale, suggesting that both groups showed differences in mean scores over time. Classroom behaviors such as "steals," "lies," "temper outbursts, explosive and unpredictable behavior," "teases other children...," "defiant," "uncooperative," and other behaviors are included in the conduct problem scale. One would expect to see significant decreases over time on the conduct problem scale; as both groups showed decreases in the frequency of inappropriate behaviors, explained below.

Frequency of Inappropriate Behaviors Results

The researcher examined daily behavioral charts to determine which classes have the greatest decreases of inappropriate behavior according to the baseline and concluding data. The frequency of inappropriate behaviors were subjected to a 2(group) x 2(pre-post) ANOVA with the last factor repeated. Table 5 presents results of the repeated measures ANOVA. A significant main effect was observed for groups ($F = 6.58$; $df = 1, 24$; $p < .017$). A significant main effect was also observed for time ($F = 27.31$; $df = 1, 24$; $p < .000$). This suggests a general decrease in the number of inappropriate behaviors from pre- to post-testing. A significant interaction also was observed ($F = 17.73$; $df = 1, 24$; $p < .000$).

Figure 8 provides a visual representation of the interaction obtained. A visual examination of Figure 8 indicates that there is a difference in the group mean of pre-and post-test results, between the meta-cognitive strategy and traditional groups. The number of inappropriate classroom behaviors pre- and post-test is influenced by the type of programming received in this study. The meta-cognitive strategy instruction group shows a significantly greater decrease in the number of inappropriate classroom behaviors from pre to post when compared to students in traditional programs.

Table 5
Analysis of Variance with Repeated Measures for Actual Count of Inappropriate Classroom Behaviors

Source	df	MS	F	p
Factor A Groups - Traditional/Cognitive (Between)	1, 24	378.27	6.58	.017
Factor B Time - Pre- & Post-Intervention (Within)	1, 24	1076.99	27.31	.000
Interaction Groups x Time	2, 48	695.33	17.63	.000
MS Error	24	39.43		

Group Means	Pre	Post
Traditional	8.96	7.17
Cognitive	21.67	5.25

One might suggest that the significantly greater decrease in the number of inappropriate behaviors in the meta-cognitive strategy group could be due to regression to the mean; however, the author does not believe this to be the case. Firstly, the groups selected from the study all consist of elementary students with behavior disorders in segregated settings; thus, subject selection should not bias the study results. Secondly, Isaac, and Michael (1978) suggest that "regression toward the mean occurs because of random imperfections in measuring instruments. The instruments used in this study, such

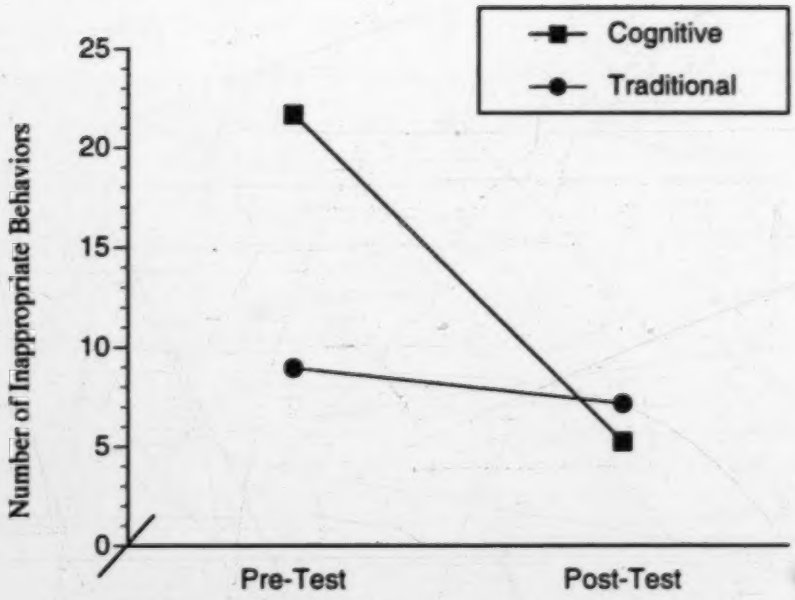

Figure 8.
Interaction of Groups by Time for Number of Inappropriate Classroom Behaviors.

as the Barkley's and Conners' Rating Scales, are often cited in research with students presenting behavior disorders. Students in the study all participated in the same testing; thus, the same imperfections should be present for all students. Thirdly, "random instability in the population may also account for regression toward the mean". The teachers' and parents' rating scales were a record of behaviors occurring over a period of time, not merely on one count of behavior; furthermore, the frequency of inappropriate behaviors were recorded on more than one day. Thus, the tests should not be affected by luck, or feelings of students.

Structured Interview Results

Thirteen pre- and ten post-test Structured Interviews from the meta-cognitive strategies group were informally evaluated. Three students were not at school during the day the interviews were conducted. Thirteen pre-test and thirteen post-test Structured Interviews from the traditional group were informally reviewed. All interviews were assessed by the researcher, along with two teachers presently working with behavior disordered students. These teachers were not part of the research study; they were asked to provide feedback on how they would view student answers. They were informed that student answers were based on Structured Interviews given pre- and post-intervention. Teachers were asked to identify the answers that could be placed under certain categories or themes. More specifically, from the question, "How does your body feel when you get angry?" two themes appeared to emerge. Responses were categorized as aggressive or non-aggressive. From the second question, "What do you do when your body starts to feel that way?" three themes appeared to emerge. Responses were categorized as positive, negative, or neutral. Examples of responses are noted in the scoring section of the thesis. The teachers and researcher categorized answers in the same manner, which resulted in

90% consistency across raters. The answers that were put in different categories were eliminated from the study. For example, an answer was not categorized if one rater categorized it as negative and another rater categorized it as neutral. The following section describes the student responses.

Question: How Do You Feel When You Get Angry ?

Responses were classified as physically aggressive if students stated that they wanted to harm another person, animal, or object. For example, "Hmm...just like to throw something or beat somebody up or something like that;" "Like, I'm ready to pound something out;" "Really angry and I feel like I want to hit someone;" as well as "Like, I want to hurt something."

Pre-test results indicated that four out of ten students in the meta-cognitive strategy intervention group responded in a physically aggressive manner when asked this question. Post-test results show only one student responded in a physically aggressive manner. Comparatively, results indicated that five students responded in a physically aggressive manner in pre-test results and three students in post-test results within the traditional program. Thus, students in both groups showed a decrease in physically aggressive responses to the question.

Eight of the thirteen students in the meta-cognitive strategy intervention group described the feelings in their bodies as "crunched up," "funny," "hard," or "mad" during pre-test questionnaires. Two stated they "didn't know." The other four, as previously stated, responded in a physically aggressive manner. In post-test questionnaires, seven of the ten students described answers in more descriptive terms. For example, "It feels like your heart pumps really fast and it feels kind of...like I feel strong," as well as "it hurts my tummy and tingles my feet." Students, in the meta-cognitive strategy group, who were

better able to describe the way their body felt answered with pro-active and positive responses to the question. Only one student in the traditional intervention group gave a more descriptive answer in post-intervention than pre-intervention. During the post-test interview, he stated his body "feels all tightened up like a snake's body, tied up...into four knots." On the pre-test questionnaire the same student responded, "It -- the brain is saying, all right. That's it. You pushed me around and I'll push you around." During post-test, when asked, "What do you do when you start to feel that way?" the student responded, "I just go home and do something." This student was able to describe how his body felt when he was angry; however, he was unable to state a positive way to deal with those feelings. Thus, when he became angry at school, he was often sent home for inappropriate behavior. Students in the meta-cognitive strategy intervention group were more descriptive in their post-intervention answers, when compared to traditional programs. This may be the result of the type of programming, because meta-cognitive interventions emphasize thinking. Students, who are learning how to become internally guided, appear to be developing their ability to describe their feelings and behaviors and react in a proactive manner.

Question: What Do You Do When Your Body Starts to Feel That Way?

Results suggest that students in both the traditional programming and meta-cognitive strategy intervention groups changed in their answer scheme pre- and post-interventions. More specifically, in nine out of ten cases, post-test results suggest students in the meta-cognitive strategy intervention group responded with a positive suggestion to "What do you do when your body starts to feel that way?" Answers were rated as a positive theme if they were included in pro-active ideas for management of uncomfortable feelings. For example, responses such as "I just count to ten and breath;" "I count to ten

and like I do breathe-ins and stuff and then I just walk away;" "take deep breaths;" "relax," and "I go in the back on a time-out." The one case that did not respond with a positive intervention did not have a positive or negative response. Rather, he reported he "gets mad." Students who received the traditional programming responded with a positive intervention to the same question in six out of thirteen cases. Four out of the thirteen students responded with what was grouped as a negative response theme. For example, "get sent to the quiet desk by a teacher, " "don't know," or "go home." The student who responded, "go home" was referring to being sent home by school personnel due to disrupting the school environment or being unable to participate in the classroom setting.

Overall, post-test questionnaires exhibit changes in the manner in which students answered questions, in both the traditional and meta-cognitive strategy groups. Next, students were questioned about how they feel when they get angry. Ninety percent of student answers were rated positive as to theme for the question, "What do you do when your body starts to feel that way?" Forty-eight percent of the student responses in the traditional group were rated positive as to theme.

Summary of Results

Results of the Russell A. Barkley Home Situation's Questionnaire and Russell A. Barkley School Situation's Questionnaire suggest that the meta-cognitive strategy intervention technique resulted in the greatest generalization across time and settings in this study, as compared to traditional programs. A greater decrease from pre- to post-test results in the number of problem settings at home and at school were noted for the meta-cognitive strategy intervention as compared to traditional programming. Thus, one might consider the utilization of a meta-cognitive strategy based program with students in segregated district sites for students presenting behavior disorders.

The results of the Conners' Teacher Rating Scale also showed significant differences between the experimental and control group in favor of the meta-cognitive strategy intervention, for a number of dimensions. Statistically significant differences were found between the meta-cognitive and traditional programs in pre- and post-test results with respect to four dimensions. Students in the meta-cognitive strategy program showed greater decreases in levels of anxious-passive, emotional indulgence, and hyperactive behaviors, when compared to students receiving traditional programming. Furthermore, students in the traditional group displayed increases in hyperactive behaviors. As well, significant differences were noted in the hyperactivity index scores; with students receiving meta-cognitive programming displaying greater decreases in their T-scores, as compared to traditional programming.

Behavioral charts displayed actual acts of inappropriate behavior. These behaviors were charted by teachers two times per week. The days of recording were selected according to a table of random numbers. Significant differences were noted between meta-cognitive and traditional programs in pre- and post-test data. More specifically, students receiving meta-cognitive strategies instruction displayed a greater decrease in the number of inappropriate behaviors being displayed in the classroom when pre- and post-test data were compared.

Structured Interviews were transcribed from audiotapes to determine if there had been a self-diagnosed change in physiological outbursts. Interviews were analyzed based on informal qualitative measures. As part of this procedure, common themes were pulled out and reported. The responses were categorized according to common themes. Findings suggest that students in the meta-cognitive strategy intervention group show a greater number of positive suggestions than students in the traditional programs, when asked,

"What do you do when your body starts to feel that way?" Responses, such as relax, breath, count, go to the time-out room, were categorized as positive. As indicated earlier, there are greater decreases in frequency of inappropriate behaviors in the meta-cognitive strategy group when compared to the traditional group, which suggests that students may actually be using the positive interventions discussed above. Furthermore, the decreases in the number of problem settings at home and at school suggests that students in the meta-cognitive strategy group may be generalizing these positive interventions into other settings and across times when compared to students receiving traditional programming.

Overall, this research study suggests that students receiving meta-cognitive strategy instruction became more descriptive and pro-active when answering questions related to their perceptions of the physiological body changes occurring as they became angry. This suggests that students are displaying higher levels of meta-cognitive awareness and developing the ability to stop and think before they behave in an inappropriate manner. This was confirmed in the frequency of inappropriate classroom behaviors. Students in the meta-cognitive strategies group displayed greater decreases in the amount of inappropriate behavior pre- and post-intervention when compared to students in the traditional programs. Also, according to Russell A. Barkley's Home and School Situations Questionnaires, students in the meta-cognitive strategy group showed greater decreases in the number of situations where inappropriate behavior was displayed. Once again, this generalization may be due to the nature of cognitive and meta-cognitive programming. Students in the meta-cognitive strategies group may be self-monitoring their physiological body changes, which results in the promotion of pro-social behavior at school and at home.

The next chapter focuses on conclusions. This thesis has some limitations and future implications for research and education; these issues are also addressed in the final chapter.

CHAPTER VI

CONCLUSIONS

Concluding Remarks and Future Directions

This study is merely the beginning of research studies in the area of a multi-strategies approach to cognitive and meta-cognitive strategy instruction for students presenting behavior disorders. The researcher plans to continue the investigation of the processes that underlie change in aggressive and disruptive behavior patterns. This chapter provides an overview of the research study, educational and research implications, limitations of the study, as well as conclusions

Students exhibiting behavior disorders often have difficulty within the classroom setting. These students display aggressive and disruptive behavior patterns which cause difficulty in school. The aim of this study was to ascertain whether meta-cognitive strategies instruction was more effective than traditional programming in decreasing inappropriate behavior, in elementary aged children with behavior disorders. Furthermore, the study investigated whether treatment effects generalized across different settings and time.

This research project was based on a review of the literature, which suggests that nine percent of the special needs population has been labeled as severely behavior disordered. Furthermore, many other students who fall within the special needs area display inappropriate behavior (Winzer, 1996). Students with behavior disorders commonly demonstrate inappropriate behaviors within the classroom; thus, teachers often find it difficult to manage these children.

The literature explored two theoretical frameworks which are often practiced with students presenting behavior disorders within the classroom. The first is behavior

modification and the second is meta-cognitive strategy instruction. Many classrooms for students with behavior disorders employ behavior modification systems which rely on a reward structure. On the other hand, cognitive theory focuses on having students become self-regulated learners who take ownership and responsibility for themselves in their learning and behavior. This may be achieved through strategic learning.

This research study compared two types of programming, traditional and meta-cognitive strategy instruction, in order to determine which was most effective programming for students with behavior disorders. The majority of segregated programs for students with behavior disorders, in the participating school system, utilize a token economy system/response cost systems. Students are given points for performing in a specific manner. These points may be traded in for candy or special privileges within the classroom. When these behaviors are not exhibited, students lose points. The second type of program in this study encompassed the teaching of meta-cognitive strategies to students in order to promote an internal locus of control. Students were taught positive self-talk, goal setting, relaxation/visualization, problem solving, and self-monitoring physiological body changes. Furthermore, the program included components of generalization. Both programs included a social skills component whereby students were taught appropriate social behavior.

The sample included 26 students in segregated sites for students presenting behavior disorders in a large urban school system. Each classroom included six or seven students, depending on enrollment and consent to participate in the study. The research project took place over a six month period. A Pre-Test / Post-Test Design was chosen, including the Russell A. Barkley's Home Situations Questionnaire, Russell A. Barkley's School Situations Questionnaire, Conners' Teacher Rating Scale, a Structured Interview,

as well as the mean of the first three days of charting inappropriate behavior recorded by the teacher, and the mean of the last two weeks of behavioral charting.

Results indicated that students who received traditional programming displayed an increase in mean scores pre- and post; therefore, data indicate that these students increased in the number of problem settings at school. At the same time, pre- and post- test results indicated that students who received meta-cognitive strategy programming displayed a decrease in their mean scores, indicating that the number of problem settings at school decreased after treatment. Results indicated that students displayed a greater decrease in the number of problem settings in the school settings after meta-cognitive strategies instruction. Results also suggested that students receiving meta-cognitive strategies instruction displayed a greater decrease in the number of problem settings at home than students who received traditional programming.

The Conners' Teacher Rating Scale suggested that students who received meta-cognitive strategies instruction displayed significant decreases in t-scores on the following scales: anxious-passive, emotional indulgence, hyperactivity. As well, students in the meta-cognitive strategies program displayed significantly greater decreases in T-scores on the hyperactivity index. Students did not show significant interactions in scores on three scales: asocial index, conduct problems index, and daydream and attention index.

Teachers recorded frequencies of inappropriate behaviors in the classroom, because as this study observed the frequency rather than just perceived measures of inappropriate behavior. Results of pre- and post-test data suggest that students in the meta-cognitive strategies programs showed significantly greater decreases in inappropriate behaviors from pre- to post -test as compared to traditional programs. More specifically, students in the

meta-cognitive strategies group displayed significantly less inappropriate behavior over time than did students in the traditional group.

The students were asked to complete interviews which were recorded and later transcribed. Results of the questionnaires were categorized according to themes. Students were asked, "How do you feel when you get angry?" and "What do you do when your body starts to feel that way?" Examination of the answers to the first question, when comparing pre- and post-questionnaires, revealed that students in both groups showed a decrease in the number of physically aggressive answers. Students in the meta-cognitive strategy group appeared to become more descriptive in their responses in the post-test. Those students who became more descriptive appeared to be better able to respond in a pro-active and positive manner. This did not appear to be the case in the traditional group. Examination of the answers to the second question revealed that students in both groups changed their answers in pre- and post-test results to become more positive. However, students who received meta-cognitive training showed a higher likelihood to respond with a positive response than students in the traditional program.

The earlier literature review (Epanchin & Paul, 1987; Kennedy, 1982) suggested aggressive behavior is a major problem for students with behavior disorders, which continues to increase. The meta-cognitive strategy intervention group displayed greater decreases in the amount of inappropriate behaviors within the classroom setting when compared to students in traditional groups. These results suggest the possibility of decreasing inappropriate behavior, which includes acts of aggression, through the implementation of meta-cognitive strategy instruction. Aggressive behavior is usually viewed as external behavior and includes verbal or physical attacks to a person or property (Wehby et al., 1995). These types of behaviors were analyzed in this study. Students in

the meta-cognitive strategy group showed greater decreases in inappropriate behavior within the classroom setting which included acts of physical and verbal aggression.

The reviewed studies have shown that anger can lead to other actions such as acts of aggression and violence (Wehby et al., 1995). This research study revealed that students in the meta-cognitive strategies group displayed significantly greater decreases in the number of problem settings at home and school. This suggests that students may be generalizing their appropriate behavior into other settings; therefore, students decreased their levels of inappropriate behaviors which includes acts of aggression. Acts of aggression and violence may be reduced through the use of meta-cognitive instruction.

The literature review reported Flicek, Olsen, Chivers, Kaufman, Anderson (1996) positive parent, student, and teacher ratings which support integrated setting for behavior disordered students. Thus, they suggest that students with behavior disorders, who are integrated, are viewed by themselves, their parents, and teachers, as positive. At the same time, Harvey (1996) suggests, "little empirical data on the effects of inclusion on systems, educators, and students exists" (p. 205). She concludes that self-contained programs were preferred, to inclusive settings, by staff due to teaching strategies and resources. Teachers in this study suggested that meta-cognitive strategy instruction was easy to implement in the classroom and was not too time consuming. Thus, perhaps, teaching teachers how to implement meta-cognitive strategy instruction within the classroom setting could improve regular placements for students with behavior disorders, provided time and support is given to the teachers. This may improve the teaching strategies that teachers may have available within the regular and special education classrooms. Furthermore, resources which may be utilized to assist in educating students in meta-cognitive strategies, may be necessary to achieve this objective.

This study concurs with previously discussed research, suggesting that affective impulse regulation through the use of self-monitoring strategies promotes pro-social behavior and discourages anti-social behavior (Dunlap et al., 1991). Student interviews suggested that students receiving meta-cognitive strategy instruction were better able to discuss positive alternatives to situations which cause them distress. This concurs with research conducted by Dunlap et. al. (1991), which also reported increased responsiveness to questions after cognitive strategy instruction. Results of the analysis of the frequency of inappropriate classroom behavior indicate a greater decrease in inappropriate behavior in the meta-cognitive strategy group. This implies that the answers students stated as alternatives during interviews may have actually been used to reduce levels of inappropriate behavior within the classroom setting. Furthermore, these more appropriate behaviors showed greater generalization within the meta-cognitive strategy group, according to the Barkley's Home and School Questionnaires.

As previously stated, many students with behavior disorders presently participate in traditional types of programs whereby students receive rewards for appropriate behavior. This research study suggests that this may not be the most effective type of programming. Students presenting behavior disorders need to learn to become responsible for their own learning and behavior. This goal can be achieved through the facilitation of meta-cognitive strategy instruction. In order to accomplish this task, a variety of sub-goals must first be achieved. First, programs must be further developed in the area of meta-cognitive strategy instruction. Second, funding must be provided for professional development for teachers in order to teach teachers meta-cognitive strategy instruction, with students presenting behavior disorders. Third, teacher training programs at the University level should include courses in the facilitation of meta-cognitive instruction. Fourth, a collaborative model must

be employed whereby school personnel, parents, students, and outside agencies work as a team to develop meta-cognitively aware students. The study suggested that meta-cognitive strategy instruction showed greater generalization than traditional programming. Perhaps, the reason this occurred was the effort to involve parents in the process. If teachers work collaboratively with other organizations, perhaps students will continue to decrease their inappropriate behavior and develop generalization into other realms which this study did not address, such as counselling settings. Fifth, collaborative teams must be trained in the facilitation of meta-cognitive strategy instruction. These issues need to be addressed initially at the district level, in order to develop a plan of action. Next, programs for students with behavior disorders must be given attention and training.

Early intervention and prevention should be our goal. Students in elementary grades can learn to utilize meta-cognitive strategies that lead to improvements in behavior at home and at school. These are life-long strategies that allow students to develop self-control. Furthermore, inclusive settings may be addressed in further research.

Pre- and post-test comparisons in this study show promising results for meta-cognitive training instruction for students with behavior disorders in segregated sites in a large urban school system. It would be beneficial to replicate this study with another group of students and teachers in order to verify the findings, as this study does have some limitations.

The limitations of the study must be addressed. First, the research study was conducted with 26 students. It would be preferable to conduct another study on a larger scale. Second, all students in this study were from the one large urban school system. Future research might focus on a broader area and possibly across provinces or countries. Third, prevention should be a focus area for students presenting severe behavioral needs.

Perhaps future studies could focus on pre-school children rather than those students in elementary programs. Fourth, the focus of many school jurisdictions is to have inclusive classrooms whereby all students are included within the regular classroom setting. This research study focused merely on segregated classroom settings. As previously suggested, prospective studies may look at students presenting behavior disorders included in the regular classroom.

In conclusion, this research study does have some limitations; nonetheless, meta-cognitive strategies instruction show promising results with elementary students presenting behavior disorders. The researcher hopes to continue investigation in the area of meta-cognitive strategy instruction for promoting pro-social behavior in students exhibiting behavior disorders.

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Appendix A

Structured Interview

Structured Interview

Teachers Do Not Cue Students. Just ask the question one time and record the students answer. Do **not** ask things like, "Is there anything else?" or "Come on, give it a try."

Why do we need to learn how to relax?
What do you do to relax?
When do you try to relax?
Does it help?

What does setting a goal mean?
Why do people set goals?
Does goal setting help you?
Why? Why not?

How does your body feel when you get angry?
What do you do when your body starts to feel that way?

Can you solve your own problems?
If yes, how?
If no, why not?

After returning an assignment to a child or after s/he has had class time to do an activity, ask one of the following questions;
Why do you think you did well on that activity?
Why do you think you did poorly on that activity?
(The question asked will depend on how the child did on the activity; however, attributions will be recorded for both success and failure.)

Appendix B

Consent Forms

Consent Form for a Minor to Participate in Research Study

I authorize the service of _____

as a subject in the research investigation entitled: Cognitive Strategies Instruction and Behavior Modification and Their Generalization in Relation to Anger Control and Aggressive Behavior in Elementary Aged Children.

The nature and general purpose of the research procedure has been explained to me. I understand that _____

will be given a preservice explanation of the research and that he/she may decline to serve. Furthermore, I understand that he/she may terminate his/her service in this research at any time he/she so desires.

I indemnify and hold harmless the University of Alberta and its agents and employees and students from any and all liability, actions, or causes of actions that may accrue to the subject minor as a result of his activities for which this consent is granted.

Witness_____ Signed_____

Date_____

Release Form

Recordings

With full consent I hereby authorize the release of audio or visual recordings and student work samples of my minor child, _____ whether by still photograph, videotape or other mechanical device as may be available to record his/her activities.

I acknowledge that all such recordings are the sole property of the researcher to be used for research and educational purposes.

In signing this form, I hereby release the researcher and the University of Alberta, their representatives and all successors and assigns from any, and all liability, demand or damage claims of every nature and kind arising out of or connected in any way with these recordings.

NAME (please print): _____

SIGNATURE: _____

DATE: _____

WITNESS: _____

Appendix C

Two Day Training Workshop

Dr. Robert Mulcahy's Outline

PARTICIPANT WORKBOOK

A

STRATEGIES

PROGRAM FOR

EFFECTIVE LEARNING/THINKING

S.P.E.L.T.

Edmonton

Sept. 16 & 23, 1995

1995 - Robert Mulcahy, Gabe Mancini, & Judy Moench

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UNIT I: Introduction

S.P.E.L.T.

Brief background

- bringing together proven strategies from literature
- development of an effective teaching framework

Some research findings

- increased metacognitive reading awareness learning disabled and gifted
- increased reading comprehension of grade 4 learning disabled
- increasing effective use of cognitive strategies
- increased use of considering alternative approaches to problem solving

Overview of workshop: Goals and objectives.

- **Overall Goal**:

1) to develop a working knowledge of the theoretical and applied underpinnings of a learning and thinking strategy program;

2) to select and implement strategies that are appropriate for your particular class, school or district.

Reasons for teaching learning/thinking strategies:

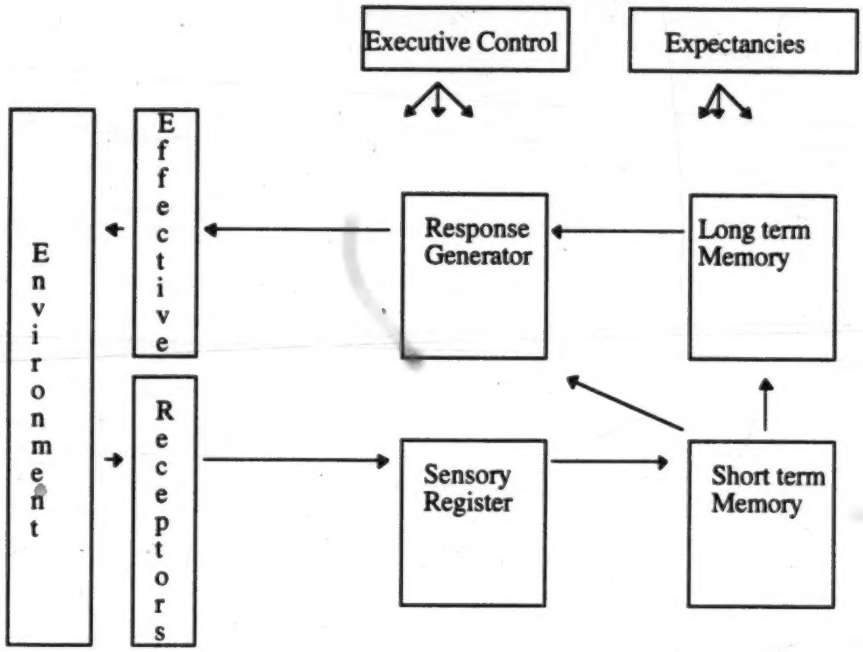
UNIT II: Theoretical Background

Philosophical and Conceptual Perspective in the Teaching of Thinking/Learning

Critical Thinking/Learning Skills Emphasized

- defining problems
- representing problems
- selecting strategies appropriate to problem at hand
- differential allocation of time
- monitoring
- searching for feedback
- developing an action plan
- putting the plan into effect
- assessing the plan

Information Processing Model



Critical Components for Effective Instruction

Characteristics of a Meta-Person

Ameta-Person	Meta-Person

Understanding Meta's

- **Meta-affect:**
- **Meta-comprehension:**
- **Meta-language:**
- **Meta-memory:**

Meta-Person

Knowledge

Self	Task	Strategy

Control

Planning	Monitoring (checking)	Assessing

UNIT III: Implementation - Application

The S.P.E.L.T. Instructional Model of Cognitive Strategies

Control

III Student	II	I Teacher
3		2
4		1

Types of strategies:

1. Primary:

2. Support:

3. General:

4. Specific:

Phase I Instruction

Goals

Student's will:

- become aware of the existence of strategies.
- develop an extensive strategy knowledge base.
- discover that the systematic use of strategies improves learning.
- develop as active participants in the learning process.

Methodology

Direct strategy instruction for Phase I

- teacher controlled
- students apply strategies
- **must** move beyond direct instruction

Key instructional steps

1. Motivation, measurement base:

2. Sell job:

3. Modelling:

4. Drill:

5. Practice:

6. Feedback (reinforcing):

7. Post-test:

Ideas for Implementing Phase I instruction

Phase II Instruction

Goals

Students will:

- ¥ maintain strategy use
- ¥ be able to evaluate present strategy use.
- • modify/extend strategies to different settings, situations.
- ¥ develop knowledge of person, task, and strategy interaction.
- ¥ be actively involved in the learning process.

Methodology

P

N

I

Paired Problem Solving

Socratic Dialogue

After the effectiveness of the strategy has been shown (Phase I) the follow-up discussion, using Socratic dialogue, should lead the student(s) to derive general principles from the specific strategy taught, as well as to apply the general principles learned to new settings and materials.

Phase III Instruction

Goals

Student's will:

- spontaneously develop and apply effective and efficient strategies to new and novel tasks/situations.
- generate, monitor, and evaluate effective and efficient strategies to improve learning.
- be actively involved in the learning process.

Methodology

Socratic dialogue:

- questioning technique to get students to critically reflect on strategic approaches to learning
- challenges students to develop a deeper understanding of their thinking through defending their approaches to strategy use.

Prompting:

- verbal encouragement with respect to strategy choice, application, and evaluation

Cueing:

- providing visual, verbal or physical information which helps direct the appropriate selection, implementation or evaluation strategies

Checking:

- on-going teacher monitoring of student strategy or task approach and understanding

Story Mapping

- the construction of a visual representation of the concepts generated or to be learned
- provides a strategy for understanding the interrelations between ideas and the visual recall of information

Generalization Ideas

Students

- ask themselves questions regarding strategy use and its effectiveness
- thinking about a strategy in as many different ways as possible
- provide feedback to themselves regarding strategy use
- students make appropriate attributional statements regarding strategy and effort with respect to failure and success of task performance

Teachers

- model effective strategy use appropriate to the task
- prompt students to apply strategies in different situations and contexts
- construct situations where students are led to discover that some strategies may or may not be appropriate for particular tasks
- constantly challenge students to reflect on strategy use, effort and appropriateness

Peers

- students cue one another to use strategies and monitor strategy application
- peers tutor one another in the selection, application, and evaluation of strategies
- strudents provide each other with social and emotional encouragement for strategy use

Parents

- parents are aware of strategy use at school and provide encouragement for same strategy use at home
- parents are aware of purpose and goals of the teaching of cognitive and metacognitive strategies and can provide reinforcement to their children at home

Classroom and School Based Implementation:

Some principles of effective cognitive strategy teaching.

Pitfalls:

Judy Moench's Outline

ANGER & AGGRESSION

COGNITIVE STRATEGIES WHICH CAN BE UTILIZED WITH BEHAVIOR DISORDERED STUDENTS

JUDY MOENCH
SATURDAY, SEPT. 23. 1995
S.P.E.L.T. WORKSHOP

1995 - Judy Moench

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STRATEGY INSTRUCTION

POSITIVE SELF-TALK

This strategy is used to help students move from an external to an internal locus of control. "Early in development, the speech of others, usually adults, mainly controls and directs a child's behavior; somewhat later, the child's covert or inner speech can assume a regulatory role" (Meichenbaum, et. al., 1971). Due to the nature of behavior disordered students, negative statements contribute to their lack of self-confidence. These students often have a very low self-esteem and will find it difficult to say good things about themselves. Lessons are designed to encourage students to talk to themselves outloud as they go about daily routines. Teachers should model self-talk on a daily basis. Students need to be encouraged to reinforce themselves and say good things to themselves: "I'm a good person!", "I can do this!", "Good for me", "I'll try!", "I'm doing a super job!"

Teaching Suggestions

Possible books to read to the class:
- The Little Engine That Could
- Francis
- Chicken Soup for the Soul

Student Self-Statements which can be made into posters:
- I Am Capable
- I Am Significant
- I Am Responsible
- I Can Solve Problems
- I Can Make Choices
- I Have Influence
- I Belong

VISUALIZATION & RELAXATION

Visualization is generally one of the strategies used for relaxation. It allows students to go to a special calming place in their mind and come back refreshed and relaxed. This strategy can be used as an effective relaxation strategy once students have recognized the physiological body changes occurring when they become angry.

Teaching Suggestions

Play a game with pictures

The class will be encouraged to look at the pictures carefully. Students may be told that pictures will be hidden, and a controlled discussion will follow. After a short period of time, the picture is removed, and students are asked to picture it in their minds. The students then share what they have seen. The pictures progressively entail more detail.

Use video equipment

Video tape the students in different situations. After viewing the video tape, students can be asked to visualize different scenarios.

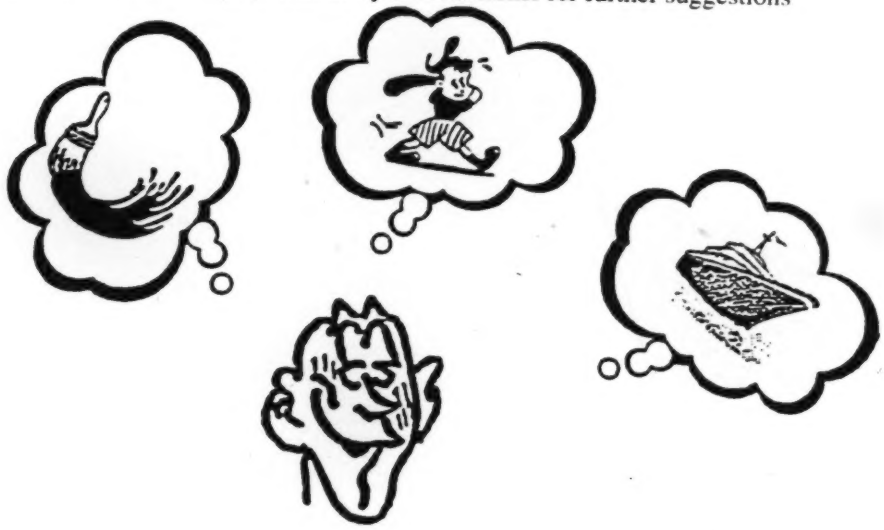
Easy listening music

A variety of songs can be played, and students can be asked to draw pictures of images created by the music.

Relaxation tapes

A selection of relaxation tapes for children can be utilized

See the relaxation manual written by the researcher for further suggestions



GOAL SETTING

Goal setting is generally a strategy used to decide where to go, how to get there, and the manner in which one may monitor themselves while pursuing the end goal. Goal setting is a process which allows students to set individual goals to become more involved in their learning and achieve a sense of satisfaction once the personal goal has been achieved. Goal setting can give student a new means to deal with the challenges that they face on a daily basis. If students are successful in completing tasks at a higher level, they will in turn raise their own self-concept and begin to realize that they are, in fact, worthwhile people. The students should discuss possible goals. Individual attention must be given to each student so that they can modify goals in order to make them achievable. Students should be encouraged to make their goals concrete rather than abstract. Lessons should focus on the need for making goals realistic, attainable, relevant, and time specific.

Teaching Suggestions

Definition to discuss with students:

Goal Setting is a tactic for specifying the direction you want to set for yourself and monitoring progress in that direction.
(Source Unknown)

Things to remember

- Start with short term goals
- Make goals concrete
- Allow yourself to fail at or drop some goals

The Process of Setting Short-Term Goals

1. State your goal in oral or written form
2. Identify the time frame in which you will accomplish your goal
3. Picture yourself completing the goal
4. When the time frame has elapsed, determine if you reached your goal
5. Identify what worked and what did not work about your efforts

PROBLEM SOLVING

This strategy gives students an alternative method of dealing with problems that they encounter. Often behavior disordered children make poor choices and use inappropriate means to solve their problems such as physical and verbal acts of aggression. Teaching students appropriate problem solving techniques will help them become responsible and take ownership of their problems. Having students stop and think about the choices before acting is an extremely useful skill. Elementary students may ask themselves four questions when confronted with a problem;

i) What is my problem?
ii) How can I do it?
iii) Am I using my plan?
iv) How did I do?

This strategy will force the students to calm down and think before acting.

Problem Solving Bears

(i)

What is my problem?

(ii)

How can I do it?

(iii)

Am I using my plan?

(iv)

How did I do?

An illustration from a comprehensive problem-solving program. (B. Camp & M. Bash. *Think aloud program Group manual, revised.* Denver, Colorado. University of Colorado Medical School. 1975 ERIC Document Reproduction Service No ED 142 024.

SELF-MONITORING PHYSIOLOGICAL BODY CHANGES

The recognition of one's physiological body changes is a process which involved self-monitoring. Affective impulse regulation through the use of self-monitoring strategies promotes pro-social behavior and discourages anti-social behavior. Behavior disordered students demonstrate difficulty controlling their anger often resulting in aggression. Recognizing physiological body changes before the aggression occurs will empower students with independence over their own behavioral gains. If students are able to become aware of the physioogical changes occurring as they get angry, they may begin to break the cycle before the aggession begins. Empowering students with this type of a strategy is difficult; nonetheless, it would be extremely benificial because students would replace aggression with self-control.

Teaching Suggestions

Self-Monitoring Physiological Body Changes
Three Phase SPELT Methodology

A. Phase One - Defining the strategy
   - (i) Read the story "John's Bad Day" or related story
   - (ii) Group discussion
     - (a) Story questions
     - (b) Story character's 'hot spots'
   - (iii) Utilize video equipment to aid in assessing physiological body changes
   - (iv) Discuss 'hot spots' individually with students

B. Phase Two - Personalize the strategy
   - (i) Students make their own bodies from cardboard carpentry
   - (ii) Take actual photographs of each student and allow students to change their faces throughout the day
     - (a) happy, tired, frustrated, and angry
   - (iii) Discuss each students 'hot spots' individually
   - (iv) Glue photocopies of affected body parts on cardboard carpentry people
   - (v) Students dress cardboard people
   - (v) Make 3 X 5 strategy cards and place in pockets of clothing

C. Phase Three - Generalization
   - (i) Transferring the strategy to another context
     - (a) Visualization
     - (b) Video equipment
     - (c) Role play
     - (d) Discuss with parents
     - (e) Verbal reminders to students

GENERALIZATION

ROLE-PLAY
- Define rules
- Provide positive endings to role-play
- Facilitate overlearning
- Provide feedback

PARENTS
- Awareness sessions
- Letters home
- Positive phone calls

PEERS
- Develop a "buddy system"
- Empower students to teach other students self-monitoring
- Assign student "experts"
- Invite peer assistance
- Encourage peers to model
- Develop brainstorming sessions
- Identify benefits of self-monitoring

VIDEO
- Encourage visualization
- Provide teacher evaluation
- Facilitate parent training

AFFECTIVE
- Elicit statements of effort attribution
- Shape attribution statements

TEACHER REINFORCEMENT
- Reinforce difficult tasks
- Elicit reinforcement from others
- Use intermittent reinforcement

GOAL SETTING
- Promote student accountability
- Empower students to face challenges
- Raise student self-concept
- Increase task completion

Meta-Cognitive Strategies for
Academic and Social Success

Mulcahy & Moench

Dr. Gabe Mancini's Outline

WHY BEHAVIOUR IS DIFFICULT TO CHANGE

BEHAVIOUR DEFINITION

WHY STUDENTS LEARN

LISTENING

PROBLEM SOLVING/DECISION MAKING

SELF-CONTROL

REQUIREMENTS

SELF-MONITORING

VERBAL MEDIATION

COGNITIVE APPROACH

PREPARING FOR A STRESSOR

CONFRONTING AND HANDLING THE STRESSOR

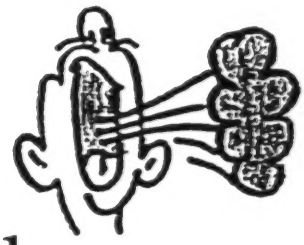
COPING WITH OVERWHELMED FEELINGS

REINFORCING SELF-STATEMENTS

Appendix D

BRAG Strategy

BRAG



B reate deeply and slowly

R elax all muscles

A llow brief visualization
of a plesant setting

G o back to task

Mulcahy, R., Marfo, K., Peat. D., and Andrews J. (1987). *A Strategies Program for Effective Learning and Thinking.* University of Alberta (p. 149).

Illustrations by Colleen Hinchberger

Appendix E

Unit Plan

Unit Plan

Purpose

Students will begin to display alternative strategies to aggression.

Goal

Students will use the skill of self-control.

Steps

The following steps will be utilized for the BRAG strategy.

Am I feeling a hot spot?

BRAG

Breath deeply and slowly

Relax all muscles

Allow brief visualization of pleasant setting

Go back to task

Objectives

The following seven objectives will be included in the study.

(1) Students will demonstrate the ability to use positive self-talk.

(2) Students will demonstrate the ability to use breathing techniques.

(3) Students will demonstrate the ability to relax their muscles.

(4) Students will demonstrate the ability to visualize.

(5) Students will demonstrate the ability to set, monitor, achieve and evaluate goals.

(6) Students will demonstrate the ability to problem solve.

(7) Students will demonstrate the ability to recognize physiological body changes. (Hot Spots).

(8) Students will demonstrate the ability to use self-control.

Methods

The S.P.E.L.T. procedures were utilized to facilitate student learning. Group and individual methods of instruction were employed. Teachers facilitated transfer and generalization across different settings and different times (see Transfer of Training).

Materials

The following list of materials were needed to conduct the lessons: lesson plans, activities, and student handouts for each component of the intervention, cardboard carpentry, camera, tape recorder, music tapes, suggested books, a video camera, the manual Relaxation in the Classroom , and the article Self-Monitoring in Relation to Anger Control for Students Experiencing Behavioral Difficulties.

Figure Caption

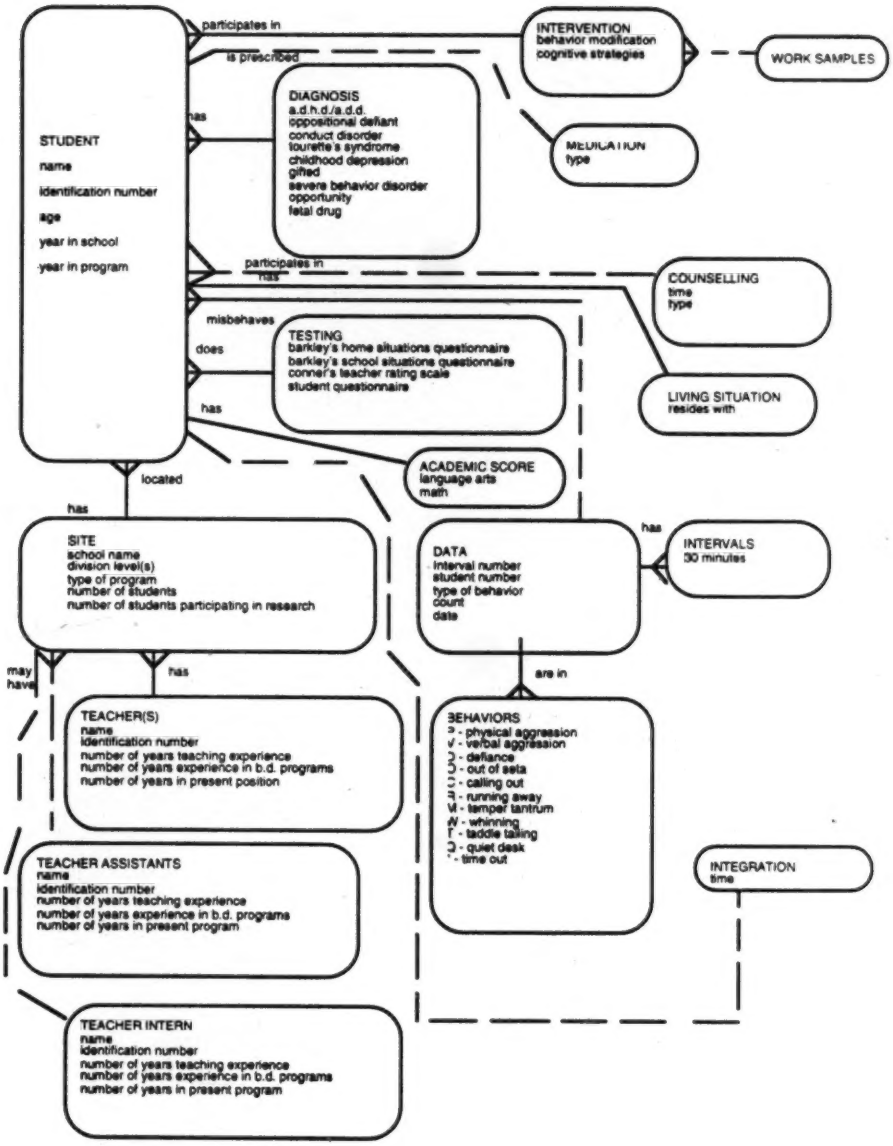
Figure 1. Behavior observation recording chart. This chart is used to list all inappropriate behaviors two times per week. There are two charts (one for a.m. and one for p.m.). These two charts would be photocopied back to back.

TIME	Name	Name	Name	Name	Name	Name	Name	Name	Name	Name
Bus Behav.										
8:30 - 9:00										
9:00 - 9:30										
9:30 - 10:00										
10:00 - 10:15										
10: 15 - 10:30 Recess										
10:30 - 11:00										
11:00 - 11:30										
11:30 - 12:00 Eating Lunch										
12:00 - 12:30 Lunch Recess										

SCHOOL NAME DATE: _____

Figure Caption

Figure 9. FileMaker Pro Plan. This figure displays the field, records, and relationships that will be utilized through the FileMaker Pro 3.0 program.



Entity Relationship Modelling